DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

MAY 17 2007

CERTIFIED MAIL 7003 2260 0005 9326 9389

Mr. William D. Fellows
P.O. Box 551
Baton Rouge, LA 70821

RE: Technically Complete Determination
ExxonMobil Refining & Supply Company
Rain Basin 2
AI-2638/ GD-033-0596/ P-0273
PER20020001
East Baton Rouge Parish

Dear Mr. Fellows:

We are in receipt of the finalized copies of your permit application dated July 27, 2006. After review of these documents, we have determined that your application is technically complete.

The Environmental Assistance Division will distribute copies of your application for public review and place public notices in the appropriate newspapers in accordance with LAC 33:VII.513.F.3. Please contact Ms. Soumaya Ghosn at (225) 219-3276 for the date of publication and the dates for the comment period. At the conclusion of the comment period, we will consider all comments and render a permit decision regarding your application.

Please continue to reference your Agency Interest Number (AI-2638) and Facility Identification Number (GD-033-0596) on all future correspondence regarding this matter. If you have any questions, please contact Ms. Enjoli' Muse of the Permits Division at (225) 219-0968.

Sincerely,

Bijan Sharafkhani, P.E.
Administrator
Waste Permits Division

em

c: Capital Regional Office

ENVIRONMENTAL **SERVICES**
: PO BOX 4313, BATON ROUGE, LA 70821-4313
P:225-219-3181 F:225-219-3309
WWW.DEQ.LOUISIANA.GOV

ExxonMobil
Refining and Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

W. D. Fellows
Environmental Manager

July 27, 2006

COPY

ExxonMobil
Refining & Supply

original to IOSW
copy to SW/G1/Townsel
AVG

Beth Scardina
Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Permits Division
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Louisiana Solid Waste Permit Mandatory Modification Document
Rain Basin No. 2
ExxonMobil Refining & Supply Company
Facility No. GD-033-0596
Solid Waste Permit No. P-0273
Agency Interest Number 2638
Activity Number PER20020001
Baton Rouge Refinery
Baton Rouge, East Baton Rouge Parish, Louisiana

RECEIVED
JUL 27 2006
LDEQ

Dear Ms. Scardina:

Per your June 28, 2006 letter, (received July 3, 2006) please find the attached as requested six copies of our Louisiana Solid Waste Permit Mandatory Modification Document (MMD).

Please contact Ron Dunham at (225) 977-4860 if you have any questions in regard to this submittal.

Very Truly Yours,

W D Fellows

Enclosure
JGA:mhs

ExxonMobil
Refining and Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

W. D. Fellows
Environmental Manager

ExxonMobil
Refining & Supply

July 16, 2004

Mr. Michael Vince
Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Permits Division
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Louisiana Solid Waste Permit Mandatory Modification Document
Rain Basin No. 2
ExxonMobil Refining & Supply Company
Facility No. GD-033-0596
Solid Waste Permit No. P-0273
Agency Interest Number 2638
Activity Number PER20020002
Baton Rouge Refinery
Baton Rouge, East Baton Rouge Parish, Louisiana

Dear Mr. Vince:

The updated Louisiana Solid Waste Permit Mandatory Modification Document (MMD) enclosed details the operational activity of the Baton Rouge Refinery's Rain Basin - 2 (RB-2) facility. As you know, the 1994 MMD submittal was accepted by the LDEQ as our permit renewal application in May 2002. In November 2003, a permit modification request was submitted to LDEQ for a facility modification which would provide for the placement of semi-circular rocks proximal to the basin inlets in accordance with LAC 33: VII.525.C. The permit modification and construction activities for the rock dikes were approved by LDEQ via a 'Letter of No Objection' in January of 2004.

The MMD update includes a complete regulatory applicability review for the facility, as well as for regulations pertaining to the rock dikes. Additionally, geological comments previously received from LDEQ (during November 2003 meeting with members of LDEQ Geology and Permits staff) have been reviewed and addressed as requested.

ExxonMobil is hopeful that the updated MMD will provide for an easier final permit review process by the LDEQ. The new construction activities mentioned above for the semi-circular rock dikes are tentatively planned for the third and fourth quarters of 2004.

Please contact Ron Dunham at (225) 977-4860 if you have any questions in regard to this submittal.

W O Fellows

l:brrf/environ2/rsd/rb-2letter

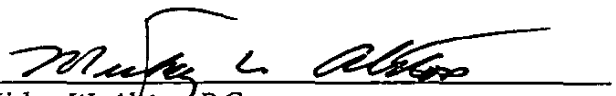
ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

Louisiana Solid Waste Permit Mandatory Modification Document Rain Basin 2

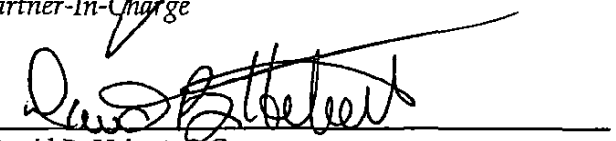
Facility No. GD-033-0596
Permit No. P-0273
Agency Interest No. 2638

July 15, 2004

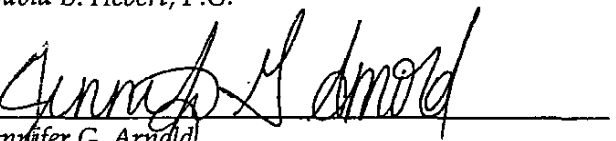
W.O.# 0016262



Mickey W. Alston, P.G.
Partner-In-Charge



David B. Hebert, P.G.



Jennifer G. Arnold

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana
(225) 292-3001

Louisiana Solid Waste Permit Application
Mandatory Modification Document
Rain Basin 2

TABLE OF CONTENTS

MANDATORY MODIFICATION DOCUMENT
LOUISIANA SOLID WASTE PERMIT APPLICATION
RAIN BASIN 2
FACILITY NO. GD-033-0596
PERMIT NO. P-0273

ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

INTRODUCTION

Background

On January 16, 1986, Exxon Company, U.S.A. filed Solid Waste Notification forms for surface impoundments at the Baton Rouge Refinery (The Solid Waste Notification form is contained in Appendix G). Exxon Company, U.S.A. is now the ExxonMobil Refining & Supply Company. These surface impoundments are critical components of the wastewater and storm water treatment facilities at the site and are operated under Louisiana Department of Environmental Quality (LDEQ) water discharge permits.

On February 24, 1986, ExxonMobil was issued an order to submit a permit application addressing Sections 6.4.2 and 6.4.3 of the Louisiana Solid Waste Rule and Regulations (LSWRR) subsequently recodified within the Louisiana Administrative Code (LAC) as LAC 33:VII Chapters 11 and 13. The permit application was submitted on August 18, 1986.

On March 14, 1988, ExxonMobil received an Administrative Order (dated March 10, 1988) to respond to the Louisiana Department of Environmental Quality (LDEQ) administrative comments on the Solid Waste Permit Application. In addition to general revisions and clarifications, the permit application was amended to include Rain Basin 2. These revisions were submitted to the LDEQ on May 14, 1988.

On October 2, 1989, ExxonMobil was issued Order-to-Close OC-0135 and OC-0136 for the Dirty Water Detention Basin and the Wet Gas Scrubber Aeration Pond, respectively. The permit application was revised to delete reference to these two impoundments.

On May 16, 1991, LDEQ amended the February 24, 1986, Order to Upgrade to include only the Rain Basin 2 and the two Wet Gas Scrubber Settling Ponds. The BIOX Basins and Rain Basin 1 became hazardous as a result of promulgation of the new TCLP test.

The permit application was revised to delete reference to the BIOX Basins and Rain Basin 1. The Wet Gas Scrubber Settling Ponds are addressed in a separate document. The permit for Rain Basin 2 was issued by LDEQ on March 13, 1992. A copy of this correspondence is included in Attachment A to this Introduction.

Revisions to the solid waste rules were promulgated by the LDEQ on February 20, 1993. The rules were recodified within Title 33, Chapter VII of the Louisiana Administrative Code. The revisions reduced the number of chapters from nineteen to eleven, and all chapter references mentioned in the old rules have changed. The new regulations significantly expanded the compliance requirements for solid waste processing and disposal facilities. They required all facilities in Louisiana to recodify and resubmit their solid waste permits by February 1, 1994.

These new regulations have developed new waste stream types and have separated solid waste facilities by classification as Type I, I-A, II, and III facilities. Per LAC 33:VII.315.G., the solid waste rules require all facilities with existing or pending solid waste permits to submit a plan to upgrade in accordance with the new requirements by February 1, 1994. This plan is called the Mandatory Modification Document (MMD), and is essentially a revision of a facility's solid waste permit application. The new rules also established new permitting, closure and exemption requirements and expanded the existing and operation standards for solid waste disposal and processing facilities. The facility covered by this permit is classified as a Type I disposal facility.

This MMD fulfills the requirements of the May 5, 1993 LDEQ memo and is written for the following facility:

- Rain Basin 2

Permit Organization

In order to facilitate evaluation, this MMD is organized in accordance with the numbering system presented in LAC 33:VII Chapter 5. A cross-reference table with the past format for the permit application is attached as Table 1. The application is divided as follows:

LAC 33:VII.519.	Application Form (Part I)
LAC 33:VII.521.	Application Form (Part II)
LAC 33:VII.523.	Application Form (Part III)
APPENDICES	

On May 5, 1993, the LDEQ sent a memorandum to all solid waste permit applicants and holders. This memorandum describes the preferred format and content of the MMD. A copy of the memorandum is provided as Attachment B.

Lists of Modifications

The May 5, 1993 LDEQ memo requires that three lists of modifications addressed in the MMD be included at the front of the MMD. The modifications addressed in this MMD are:

- **Mandatory Modifications:** The impoundments are not required to be physically modified as a result of new solid waste rules. Additions to the text to address new information requirements are noted in the attached cross-reference table (Table 1). Changes to the detection monitoring program to bring the program into compliance with the new rules, including the proposed statistical program, are addressed in Section 521.F.5.e. of the MMD.

- **Previously Approved Modifications:** The Mandatory Modification Document (MMD), May 1994, was accepted by the LDEQ as a permit renewal application in May 2002. A modification request submitted in November 2003 was approved and is to include the placement of semi-circular rock dikes proximal to the north and south inlets of the basin. In addition, this document will reflect changes in the solid waste regulations and facility information.

- **Voluntary Modifications:** There are no voluntary modifications proposed in this MMD.

TABLE 1

CROSS REFERENCE TABLE

LOUISIANA SOLID WASTE FACILITY PERMIT APPLICATION FOR TYPE I FACILITIES

1993 REVISED RULES		1992 PREVIOUS RULES
519.	Part I: Permit Application Form	1107.B.
A-S.	Application Form	1107.B.1a.-p.
M.	Letter from LRRDA on Statewide Plan Conformance	1107.B.1.m.
N.	Letter from Parish Concerning Zoning	1107.B.1.n.
Q.	Proof of Publication	1107.A.3.d.
R.	Proof of Legal Authority for Signatory to Sign	1107.B.1.p.
521.	Part II: Supplementary Information, All Processing, and Disposal Facilities	1107.C.
A.	Location Characteristics	New
	1.a. Area Master Plan	1107.C.1.
	1.b. Letter on Traffic Impact (Not Required)	New
	1.c. Existing Land Use	New
	1.d. Aerial Photograph	New
	1.e. Environmental Characteristics	1107.C.2.e.
	1.e.i. List	1107.C.2.e.i.
	1.e.ii. Letters	New
	1.e.iii. Mitigation	1107.C.2.e.ii.
	1.f. Wetlands Demonstration (Not Required)	New
	1.g. Demographic Information	New
	2.a. Wells	1107.C.2.b.ii.
	2.b. Faults	New
	2.c. Utilities	New
B.	Facility Characteristics	1107.C.2.
	1.a. Elements of Disposal System	1107.C.2.a.i.
	1.b. Perimeter Barriers, Security, and Signs	1107.C.2.a.ii.
	1.c. Buffer Zones	1107.C.2.a.ix.
	1.d. Fire Protection and Medical Care	1107.C.2.a.iv.
	1.e. Landscaping	New
	1.f. Receiving and Monitoring Income Wastes	1107.C.2.a.iii.
	1.g. NPDES Discharge Points	1107.C.2.c.ii. and 1107.C.3.c.vii(a)(v)LFR
	1.h. Other Features	1107.C.2.a.x.
	2.a. Areas for Isolating Borrow Wastes	1107.C.2.a.v.
	2.b. Location of Leachate Containment, Treatment and Removal (CTR) Systems	1107.C.2.a.vi.
C.	Facility Surface Hydrology	1107.C.2.c.
	1.a. Method to Prevent Runon	1107.C.2.c.i.
	1.b. Description of Runon/Runoff Collection System	1107.C.2.c.ii.
	1.c. Maximum 24hr/25yr Storm Event	1107.C.2.c.iii.
	1.d. Location of Aquifer Recharge Areas	1107.C.2.b.iii.
	1.e. Flood Plain Impacts	New
D.	Facility Geology	1107.C.2.d.
	1.a. Isometric Profile and Cross Sections	1107.C.2.d.i.
	1.b. Logs of Soil Borings and Abandonment Descriptions	1107.C.2.d.ii and 1107.C.3.c.vi(b).SI or 1107.C.3.c.ii.(b).LFL
	1.c. Results of Tests for Classifying Soils	1107.C.2.d.iii. and 1107.C.3.c.vii.(a).(ii).LFR
	1.d. Geologic Cross Section to 200 ft.	New
	1.e. Faults Mapped on Facility	New
	1.f. Potential Seismic Impact	New
	1.g. Unstable Area Design	New
	2. Type III Facility Geology (Not Applicable)	New

NOTE: SI = Surface Impoundments
LFL = Landfill
LFR = Landfarm

TABLE 1 (Cont'd)

CROSS REFERENCE TABLE

LOUISIANA SOLID WASTE FACILITY PERMIT APPLICATION FOR TYPE I FACILITIES

	1993 REVISED RULES	1992 PREVIOUS RULES
E.	Facility Subsurface Hydrology	1107.C.2.b.
	1.a. Ground Water Delineation to 30 ft.	1107.C.2,b.i., and 1107.C.3.c.vii.(a).(iii).LFR
	1.b. Ground Water Delineation to 200 ft.	1107.C.2.b.iv.
	2. Type II, Landfarm Subsurface Hydrology (Not Applicable)	New
F.	Facility Plans and Specifications	1107.C.3.
	1. Plans, Specifications, and Operations Must be Prepared Under Supervision and Certified by an Engineer	1107.C.3.b.
	2.a. Detailed Contour Drawings with Boring Locations	1107.C.3.a.
	2.b. Drawings of Slopes and Levee Construction	New
	2.c. Type of Material and Source for Levees	New
	3.a. Landfill Daily Fill Cover Dimensions	New
	3.b. Landfill Type of Cover Material and Its Source	1107.C.3.c.ii.(d).LFL
	4.a. Cross Sections of Facility	1107.C.3.c.ii.(a).LFL or 1107.C.3.c.vi.(a).SI
	4.b. Description of Liner System	1107.C.3.c.ii.(c).LFL or 1107.C.3.c.vi.(c).SI
	4.c. Description of Leachate CTR System	1107.C.3.c.ii.(f).LFL
	5.a. Three Wells or Piezometers	1107.C.3.c.ii.(g).LFL or 1107.C.3.c.vi.(d).SI
	5.b. Monitoring Well Details	1107.C.3.c.ii.(g).LFL or 1107.C.3.c.vi.(d).SI
	5.c. Sampling and Analysis Plan	1107.C.6.a. and b.
	5.d. Data from Existing Wells	1107.C.6.c.
	5.e. Detection Monitoring Plan	New
	5.f. Method for Plugging and Abandonment	New
	6. Gas Collection and Treatment System	New
G.	Facility Administrative Procedures	1107.C.4.a.
	1.a. Recordkeeping	1107.C.4.a.i.
	1.b. Minimum Personnel Required to Operate Facility	1107.C.4.a.ii.
	1.c. Maximum Days of Operation per Week	1107.C.4.a.iii.
	2. Type II Operator Certification (Not Applicable)	New
H.	Facility Operational Plans	1107.C.4.b.
	1.a. Types, Quantities and Sources of Waste	1107.C.4.b.i.
	1.b. Waste Handling Procedures	1107.C.4.b.ii.
	1.c. Minimum Equipment to be Furnished at the Facility	1107.C.3.c.ii.(e)LFL.
	1.d. Plan to Segregate Wastes	1107.C.4.b.iii.
	1.e. Procedures for Breakdowns, Abnormal Conditions	1107.C.4.b.iv.
	1.f. Contingency Procedures	1107.C.4.b.v. and 1107.C.4.a.v.
	1.g. Procedures for Controlling Vectors, Dust, Litter and Odors	1107.C.4.b.viii. and 1107.C.2.a.viii.
	2.a. Comprehensive Facility Operational Plan	New
	2.b. Salvaging Procedures and Control	1107.C.4.b.vi.
	2.c. Scavenging Control	1107.C.4.b.vii.

NOTE: SI = Surface Impoundments
LFL = Landfill
LFR = Landfarm

TABLE 1 (Cont'd)

CROSS REFERENCE TABLE

LOUISIANA SOLID WASTE FACILITY PERMIT APPLICATION FOR TYPE I FACILITIES

	1993 REVISED RULES	1992 PREVIOUS RULES
	3. Operational Plans for Landfarms	1107.C.3.c.vii.LFR
	3.a. Mandatory Submittal Items	1107.C.3.c.vii.(a).LFR
	3.b. Submittal Items for Food-chain Cropland	1107.C.3.c.vii.(b).LFR
	3.c. Submittal Items for Non-food-chain Landfarms	1107.C.3.c.vii.(c).LFR
	4. Operational Plans for Type I-A and II-A Incinerator Waste-Handling Facilities (Not Applicable)	1107.C.3.c.i.
	5. Operational Plans for Type I-A and II-A Refuse-Derived Fuel Facilities and Type III Separation and Composting Facilities (Not Applicable)	1107.C.3.c.iii.
	6. Description of Marketing Produces and Control for Facilities in Item 5., above (Not Applicable)	New
	7. Operational Plans for Facilities With Potential to Produce Gases. (Not applicable)	New
I.	Implementation Plan	1107.C.5.
	1.a. Construction Schedule	1107.C.5.a.
	1.b. Details on any Phased Implementation	1107.C.5.b.
	2. Plans for Closing or Upgrading Existing Operating Areas	New
J.	Facility Closure	1107.C.7.
	1.a. Date of Final Closure of the Facility	1107.C.7.b.
	1.b. Method and Steps Necessary for Closing the Facility	1107.C.7.c.
	1.c. Estimated Cost of Closure	1107.C.9.d.i.
	2.a. Description of Final Cover	New
	2.b. Largest Surface Area Requiring Final Cover	New
	2.c. Estimate of Maximum Inventory of Solid Waste	New
	2.d. Closure Schedule	1107.C.7.a.
	3.a. Sequence of Final Closure by Unit	New
	3.b. Drawing with Final Contours of Facility	New
	3.c. Copy of Document to be Filed with Parish	1107.C.7.d.
K.	Facility Post Closure	1107.C.8.
	1.a. Long-Term Use of Facility	1107.C.8.a.
	1.b. Cost of Conducting Post Closure	1107.C.9.d.i.
	2.a. Method for Calculating Post-Closure Activities	1107.C.6.d.
	2.b. Method of Monitoring System Abandonment	1107.C.8.d.
	2.c. Measures Planned to Ensure Public Safety	1107.C.8.b.
	2.d. Use of Facility During Post-Closure	1107.C.8.c.
L.	Financial Responsibility	1107.C.9.
	1. Owner Name and Address	1107.C.9.a.
	2. Permittee Annual Report	1107.C.9.b.
	3. Evidence of Liability Coverage	1107.C.9.c.
	4. Evidence of a Financial Assurance Mechanism	1107.C.9.d.ii.
M.	Special Requirements	1107.C.10.
523.	Part III: Additional Supplementary Information	IT Decision Questions

NOTE: SI = Surface Impoundments
LFL = Landfill
LFR = Landfarm

LDEQ Permit Acceptance Correspondance

Attachment A

July 2004

W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

State of Louisiana

Department of Environmental Quality

Edwin W. Edwards
Governor

Kai David Midboe
Secretary

STANDARD PERMIT

Site Number: GD-033-0596 Standard Permit Number: P-0273

Pursuant to the Louisiana Environmental Quality Act (La. R.S. 30:2001 et seq; "the Act") as amended, and the Louisiana Administrative Code, Title 33, Part VII, a Standard Permit is issued to:

Exxon Company, U.S.A.
(hereinafter referred to as the "Permittee")
Post Office Box 551
Baton Rouge, Louisiana 70821-0551

Limitations and conditions applicable to this Standard Permit:

1. This Standard Permit applies only to the Clean Master Separator (hereinafter referred to as the "Facility"), located at 4045 Scenic Highway, Baton Rouge, Louisiana, in Section 44, Township 6 South, Range 1 West in East Baton Rouge Parish.

2. Upon completion of construction of all upgrading measures outlined in the implementation plan and after implementation of new activities required by the Standard Permit, certification by a qualified professional must be given to the Secretary of the Department of Environmental quality, that the Facility, as it exists, is consistent with the representations made in the permit application accepted by the Solid Waste Division and all conditions of the Standard Permit.

3. The Permittee shall notify the Division prior to commencement of operation of new features constructed as part of the upgrading of the Facility so that an inspection can be made in accordance with LAC 33:VII.1111.A.

4. The operation of the Facility is subject to all applicable rules and regulations and orders of the Solid Waste Division now and hereafter in effect.

5. The operation of the Facility shall be in accordance with the representations made in the permit application accepted by the Solid Waste Division and all conditions of this Standard Permit.

6. The estimated date of final closure of the Facility as provided in LAC 33:VII.1107.C.7.b of the permit application is to be used for the purpose of projecting the Facility's potential capacity. This Standard Permit expires _____

March 13, 2002, by which time the Permittee shall submit a current permit application for the Facility or it shall be closed in accordance with the closure plan outlined in the permit application.

7. No modification to a site, facility, process or disposal method or operation may be effected without prior approval of the Secretary in accordance with LAC 33:VII.1105.G.

8. Failure to operate the Facility in accordance with the Act, the Louisiana Administrative Code, Title 33, Part VII, or this Standard Permit shall constitute a violation which will subject the Permittee to the possible imposition of civil penalties in accordance with LAC 33:VII, Chapter 15 and Section 2025 of the Act; and to the possible suspension or revocation of the Standard Permit in accordance with LAC 33:VII.1105.N.

Kai David Midboe

KAI DAVID MIDBOE, Secretary
Department of Environmental Quality

3/13/97
Date of Issuance

State of Louisiana

Department of Environmental Quality

M. J. "MIKE" FOSTER, JR.
GOVERNOR

JAN 0 9 2004

L. HALL BOHLINGER
SECRETARY

CERTIFIED MAIL 7002 2030 0002 8916 1548
RETURN RECEIPT REQUESTED

Mr. W.D. Fellows
ExxonMobil Refining & Supply
P.O. Box 551
Baton Rouge, Louisiana 70821

RE: ExxonMobil Baton Rouge Refinery Rain Basin #2
Facility No. GD-033-0596
Permit No. P-0273 (AI# 2638)/PER20020001
Permit Minor Modification Request

Dear Mr. Fellows:

The Permits Division is in receipt of ExxonMobil's letter dated November 14, 2003, requesting a permit modification regarding the proposed construction activities in Rain Basin #2.

Based upon its review of ExxonMobil's correspondence and the solid waste permit, the Permits Division concludes that the proposed action for Rain Basin #2 qualifies as a maintenance and operation activity that will be beneficial to the environment. Therefore, the Permits Division approves this minor modification.

Additionally, the Permits Division requests that ExxonMobil include the referenced Agency Interest Number 2638 and Activity Number PER20020002 on all correspondence submitted to the agency that pertains to this permitting activity.

Should you have any questions regarding this matter, contact Mr. Mark Fleet, Permits Division at (225) 219-3139.

Sincerely,

Linda Korn Levy
Assistant Secretary

mf

c: Jason Meyers, OEA - ETD

ENVIRONMENTAL DEPT.
W.D. FELLOWS
MEM
File JAN 16 2004 Handle
Copy Comment
Update RAC WJE KMH See Me
Circulate CJD AEC DHL Info
TSH AGF DESTROY

State of Louisiana

Department of Environmental Quality

KATHLEEN BABINEAUX BLANCO
GOVERNOR

NOV 18 2004

MIKE D. McDANIEL, Ph.D.
SECRETARY

CERTIFIED MAIL 7003 2260 0001 2756 1514
RETURN RECEIPT REQUESTED

Mr. W. D. Fellows
ExxonMobil Refining & Supply
P. O. Box 551
Baton Rouge, LA 70821-0551

RE: Notice of Deficiencies
ExxonMobil Refining & Supply
Solid Waste Mandatory Modification/Permit Renewal Application
Agency Interest #2638
Activity Number PER20020002
East Baton Rouge Parish

Dear Mr. Fellows:

The Permits Division is in receipt of your submittal dated July 16, 2004, regarding a permit renewal application for the above-referenced facility. According to the information submitted, your facility is requesting a renewal for its solid waste surface impoundments operation along with construction of rock dikes for the basin inlets.

A technical review has been conducted and the following comments are presented regarding items not considered in conformity with the applicable sections of the Louisiana Solid Waste Regulations (LAC 33:VII):

Technical Review

521.A.1.e Provide documentation substantiating that there are no known historic sites, recreational areas, archeological sites, designated wildlife management areas, wetlands, habitats for endangered species, and other sensitive ecologic areas within 1000 feet of the facility;

521.B.1.c Please address 709.B.2.b

521.G.1.a Please address 713.C.1.b.iii (J) (K)

ENVIRONMENTAL DEPT.
W.D. FELLOWS
MEM Handle
File NOV 22 2004 Comment
Copy RSD See Me
Update RAC WJE KMH Info
Initiate AEC DHL
ISH AGF DESTROY

521.H.1.f Address R.S. 30:2157

521.H.2 Address 713.D.1.(a) (b)

521.H.3 Address this section as to whether it applies or not.

521.J.1 Address 713.E.1.

521.J.1 Address 713.E.2.b.

521.J.1 Address 713.E.3.b. vii.

521.J.3.c Submit a copy that will be filed in the parish records upon final closure (see section 3011 appendix F).

Engineering Review

521.A.1.a Figure A-1 does not show the drainage flow patterns in the vicinity of Rain Basin 2.

521.A.1.d The aerial photograph included does not show the location of Rain Basin 2 or the 1-mile radius surrounding the facility.

521.A.1.e.ii Documentation must be provided from the appropriate state and federal agencies substantiating the areas listed in this section.

521.B.1.c The location of the 200-foot buffer zone was not shown on any figure.

521.B.1.f The Facilities Operational Plan is not included in Appendix A.

Please address 709.B.5.

521.C.1.a Please include the method(s) used to prevent surface drainage through the operating area of Rain Basin 2.

521.C.1.e Measures should be taken to ensure that flooding (high river stage) does not result in the washout of solid waste. All discharges from the facility must be in compliance with the Louisiana Water Quality Regulations.

521.F.2.b Please address 713.B.2.b.

521.H.1.a The analyses included in Appendix G contains only metals analysis for the sediment from the Clean Master Separator. The analysis of the sediment in Rain Basin 2 should include metals as well as hydrocarbons that may be present in the sediment.

521.H.1.b Please address 713.D.2 and 713.D.3.b.

521.I.1.a The response included indicates that construction will commence during the third and fourth quarter of 2004 but did not include what is to be constructed.

521.J.1.b The proposed number of samples (4) may not be sufficient to determine that all of the contamination has been removed from the impoundment. Additional samples should be taken from both the bottom of the impoundment and the sidewalls.

The background samples should be taken from a location that has not been impacted by the operation of any waste disposal facility or process.

Geological Review

521.D According to the information submitted, it appears that the facility does not meet the minimum boring requirements of the Solid Waste Regulations as stipulated in LAC 33:VII.709.C.1.c.

The borings should meet the minimum depth and sampling frequency requirements. All borings should be continuously sampled to at least thirty (30) feet below the base of excavation. At least ten percent of the borings (minimum of three borings) shall extend to 100 feet below the grade level to characterize the shallow geology.

Any additional boring should indicate where groundwater is first encountered.

521.D.1.a Please provide geological cross-sections that incorporate all borings located in the vicinity of Rain Basin No. 2. Cross-sections should depict the monitoring well/piezometers, boring logs, and screen intervals. Please note that cross-

sections should be developed for each transect of the boring grid pattern. Also note that cross-sections should show the maximum depth of the impoundments.

521.D.1.b No boring logs were found in Appendix D for borings M-8, DMS-3, and DMS-4.

Please note that logs of all borings located in the vicinity of Rain Basin No. 2 shall be submitted.

521.E.1.a.iii Please provide additional potentiometric data to discern any possible seasonal and temporal fluctuation in the groundwater flow direction beneath the impoundment. Typically, potentiometric data should be collected from the piezometers at least quarterly over a year period.

The water level of the surface impoundment should be included on and used to develop potentiometric surface maps.

521.E.1.a.iv Please note that radial flow if applicable needs to be discussed in the permit application.

521.F.5.c You must include justification of the parameters or constituents listed in Table 4-1 of your Sampling and Analysis Plan located in Appendix N. A complete chemical analysis of the sludge in the impoundment should be provided in order to determine the appropriate groundwater monitoring parameters.

The Practicable Quantitation Limit (PQL) for all parameters should be lower than or equal to the primary and secondary drinking water standards.

The following deficiencies/comments were noted in the Groundwater Monitoring Plan submitted in Appendix N of the document:

- The Sampling and Analysis Plan in Appendix N combines groundwater monitoring programs for both Rain Basin No. 2 and the Wet Gas Scrubber Settling Ponds. Given that these solid waste facilities are covered under separate permits, Sampling and Analysis Plans for each must be separate documents.

- QA/QC measures such as the use of field blanks and laboratory spikes and blanks must be mentioned in detail in your Sampling and Analysis Plan.

- The total depth of each well shall be determined during each sampling event.

- All purge water during sampling events shall be disposed of properly.

All groundwater monitoring reports should include scaled potentiometric surface maps showing monitoring well locations and groundwater elevations with respect to mean sea level.

Your response to these deficiencies shall be sent to this office within thirty (30) days of receipt of this letter. Please refer to the sections and denoted regulations when responding to the comments. Additionally, four (4) copies of your response, including appendices, shall be provided. Please refer to your Agency Interest Number (2638) and Activity Number (PER20020002) on all future correspondence.

If you have any questions concerning this matter, contact Mr. Mark Fleet (Technical Review) at (225) 219-3739, Mr. Gary Leonards (Engineering Review) at (225) 219-3459, or Mr. Carey Dicharry (Geology Review) at (225) 219-3410.

Sincerely,

Beth Scardina

Beth Scardina
Environmental Scientist Manager
Solid and Hazardous Waste Permits Section

mf

c: Gary Leonards, OEA-ETD
Carey Dicharry, OEA-ETD

ExxonMobil
Refining and Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

W. D. Fellows
Environmental Manager

ExxonMobil
Refining & Supply

December 3, 2004

Beth Scardina
Louisiana Department of Environmental Quality
Office of Environmental Services
Solid and Hazardous Waste Permits Section
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Notice of Deficiencies (NOD)
ExxonMobil Refining & Supply
Solid Waste Mandatory Modification/Permit Renewal Application (Rain Basin 2)
Agency Interest # 2638
Activity Number PER20020002
East Baton Rouge Parish

Dear Ms. Scardina:

We are in receipt of your above referenced November 18, 2004 letter. After careful review of the NOD, we feel that it is not possible to properly respond to the comments within 30 days from receipt (November 22, 2004) of your letter. Therefore, we are requesting a 30 day extension to comply with this submittal. This would make the new submittal date January 21, 2005.

We appreciate your consideration into this matter and under the circumstances request a timely response. Please direct any comments or questions to Ron Dunham at (225) 977-4860.

W D Fellows

RSD:I/brrf/environ2/rsd/RB2NOD
Certified Mail # 7000 1670 0012 9722 6448

State of Louisiana

Department of Environmental Quality

KATHLEEN BABINEAUX BLANCO
GOVERNOR

DEC 2 0 2004

MIKE D. McDANIEL, Ph.D.
SECRETARY

CERTIFIED MAIL 7003 2260 0000 5816 5249
RETURN RECEIPT REQUESTED

Mr. W. D. Fellows
ExxonMobil Refining & Supply
P. O. Box 551
Baton Rouge, LA 70821-0551

RE: Notice of Deficiencies
ExxonMobil Refining & Supply
Solid Waste Mandatory Modification/Permit Renewal Application
Agency Interest #2638/P-0273
Activity Number PER20020001
East Baton Rouge Parish

Dear Mr. Fellows:

The Water and Waste Permits Division is in receipt of your submittal, dated December 3, 2004, regarding an extension. According to the information submitted, your facility is requesting an extension of time to respond to the notice of deficiencies found in your renewal application for Rain Basin-2.

After careful review and consideration of your submittal, your request for a thirty (30) day extension is approved. Therefore, your response shall be due by January 21, 2005.

Please reference your Agency Interest Number 2638 and Activity Number PER20020001 on all future correspondence submitted to the agency that pertains to this permitting activity. Should you have any questions regarding this matter, please contact Mr. Mark Fleet, Water and Waste Permits Division, at (225) 219-3139.

Sincerely,

Beth Scardina

Beth Scardina
Environmental Scientist Manager

mf

ENVIR... DEPT.
W... SERVICES
MEM Handle
File DEC 2 8 2004
Copy
Date

RSD-0

ExxonMobil
Refining and Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

W. D. Fellows
Environmental Manager

ExxonMobil
Refining & Supply

January 21, 2005

Beth Scardina
Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Solid and Hazardous Waste Permits Section
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Notice of Deficiencies Response
ExxonMobil Refining & Supply Company
Solid Waste Mandatory Modification/Permit Renewal Application
Agency Interest # 2638 / P-0273
Activity Number PER20020001

Dear Ms. Scardina:

Per your November 18, 2004, letter, (received November 22, 2004) please find attached as requested four copies of our Notice of Deficiency responses for the above referenced permit renewal application.

Also, we would like to again express our appreciation to LDEQ in granting our December 3, 2004 request for a 30 day submittal extension.

W D Fellows

RB-2renewal
Certified Mail # 7000 1670 0012 9722 6462

Notice of Deficiencies Responses
Updated Louisiana Solid Waste Permit Mandatory Modification Document
Rain Basin No. 2
ExxonMobil Refining & Supply Company
Facility No. GD-033-0596
Solid Waste Permit No. P-0273
Agency Interest No. 2638
Activity No. PER20020002 / PER20020001
Baton Rouge Refinery
Baton Rouge, East Baton Rouge Parish, Louisiana

Technical Review

LDEQ Comment:

521.A.1.e *Provide documentation substantiating that there are no known historic sites, recreational areas, archeological sites, designated wildlife management areas, wetlands, habitats for endangered species, and other sensitive ecologic areas within 1000 feet of the facility.*

ExxonMobil's Response:

Confirmation that none of the subject sites, areas, or habitats are known to be within 1000 feet of the facility is documented in correspondence from the Louisiana Department of Wildlife and Fisheries included herein as Attachment A. The correspondence originated during preparation of the 1994 MMD submission. A recently obtained verification from the United States Department of Interior Fish and Wildlife Service is also included.

LDEQ Comment:

521.B.1.c *Please address 709.B.2.b.*

ExxonMobil's Response:

The location of the buffer zone was added to replacement Figure A-4 included in Attachment B. The natural and artificial barriers that constitute the buffer zone do not store, process, or dispose of solid waste. .

LDEQ Comment:

521.G.1.a *Please address 713.C.1.b.iii (J) (K).*

ExxonMobil's Response:

This response was provided on replacement page G-1 included in Attachment B. For further clarification, the list of records on file was modified to read:
5. Certified field notes for construction and installations
6. Operator training programs, certifications, and certificates

LDEQ Comment:

521.H.1.f *Address R.S. 30:2157.*

ExxonMobil's Response:

This response was provided on page H-2, H-3, Appendix C, and Appendix I. For further clarification, ExxonMobil's membership with the Baton Rouge Area Mutual Aid System (BRAMAS) was integrated within the text on replacement page H-3 included in Attachment B.

LDEQ Comment:

521.H.2 *Address 713.D.1.(a) (b).*

ExxonMobil's Response:

A not applicable response was provided on replacement page H-4 included in Attachment B. Neither hazardous waste nor open burning operations are conducted within Rain Basin 2.

LDEQ Comment:

521.H.3 *Address this section as to whether it applies or not.*

ExxonMobil's Response:

A not applicable response was provided on pages H-4 - H-7.

LDEQ Comment:

521.J.1 *Address 713.E.1.*

ExxonMobil's Response:

This response was provided on page J-1. As requested by LDEQ, minor changes were made to the current closure plan and are located in replacement Appendix J included in Attachment B. The changes included increasing the number of samples taken during closure and only allowing licensed facilities to dispose of excavated waste.

LDEQ Comment:

521.J.1 *Address 713.E.2.b.*

ExxonMobil's Response:

713.E.2.b. is not applicable to this facility. Current operations do not include a runoff-diversion system.

LDEQ Comment:

521.J.1 *Address 713.E.3.b.vii.*

ExxonMobil's Response:

This response is discussed on replacement pages in Appendix J included in Attachment B. For further clarification, language was added to state that ExxonMobil will only use licensed facilities to dispose of excavated waste should the material be disposed off-site.

LDEQ Comment:

521.J.3.c *Submit a copy that will be filed in the parish records upon final closure (see section 3011 appendix F).*

ExxonMobil's Response:

This document is required to be submitted upon final closure of a landfill facility. This facility is a surface impoundment and will undergo clean closure in the year 2024; therefore this form is not applicable.

Engineering Review

LDEQ Comment:

521.A.1.a *Figure A-1 does not show the drainage flow patterns in the vicinity of Rain Basin 2.*

ExxonMobil's Response:

Drainage flow patterns are indicated on Figure A-1. The topographic map presents surface contours indicating the drainage flow patterns. Additionally, facility stormwater is managed by the facility's sewer systems.

LDEQ Comment:

521.A.1.d *The aerial photograph included does not show the location of Rain Basin 2 or the 1-mile radius surrounding the facility.*

ExxonMobil's Response:

See aerial photograph, replacement Figure A-4 included in Attachment B, which depicts the location of Rain Basin 2 and a 1-mile radius surrounding the facility. For clarification, a circle encompassing a one mile radius surrounding the facility was added to the figure.

LDEQ Comment:

521.A.1.e.ii *Documentation must be provided from the appropriate state and federal agencies substantiating the areas listed in this section.*

ExxonMobil's Response:

As stated in the first response above, substantiating correspondence from the Louisiana Department of Wildlife and Fisheries is included as Attachment A. The correspondence originated during preparation of the 1994 MMD submission. A recently obtained verification from the United States Department of Interior Fish and Wildlife Service is also included.

LDEQ Comment:

521.B.1.c *The location of the 200-foot buffer zone was not shown on any figure.*

ExxonMobil's Response:

As stated in the second response above, the location of the buffer zone was added to replacement Figure A-4 included in Attachment B.

LDEQ Comment:

521.B.1.f *The Facilities Operational Plan is not included in Appendix A. Please address 709.B.5.*

ExxonMobil's Response:

The Facilities Operational Plan is located in replacement Appendix H included in Attachment B. Appendix H satisfies 709.B.5.

LDEQ Comment:

521.C.1.a *Please include the method(s) used to prevent surface drainage through the operating area of Rain Basin 2.*

ExxonMobil's Response:

This requirement is not applicable; this facility does not experience surface drainage.

LDEQ Comment:

521.C.1.e *Measures should be taken to ensure that flooding (high river stage) does not result in the washout of solid waste. All discharges from the facility must be in compliance with the Louisiana Water Quality Regulations.*

ExxonMobil's Response:

All discharges are managed under the current NPDES permit.

LDEQ Comment:

521.F.2.b *Please address 713.B.2.b.*

ExxonMobil's Response:

This facility is not protected by levees; see Appendix B, Drawing 3. There is a grassy area maintained by ExxonMobil which provides protective measures.

LDEQ Comment:

521.H.1.a *The analyses included in Appendix G contains only metals analysis for the sediment from the Clean Master Separator. The analysis of the sediment in Rain Basin 2 should include metals as well as hydrocarbons that may be present in the sediment.*

ExxonMobil's Response:

Although the function of Rain Basin 2 is for the collection of only storm water, the Facility Operations Plan, replacement Appendix H included in Attachment B, includes analytical data from a recent sampling of the rain basin.

LDEQ Comment:

521.H.1.b *Please address 713.D.2 and 713.D.3.b.*

ExxonMobil's Response:

Recordkeeping and inspection measures were included on pages H-5 and H-6. Additional information is provided in replacement Appendix H included in Attachment B. All sampling protocols and testing frequencies are compliant with current NPDES permit regulations.

LDEQ Comment:

512.I.1.a *The response included indicates that construction will commence during the third and fourth quarter of 2004 but did not include what is to be constructed.*

ExxonMobil's Response:

This response is provided on replacement page I-1 included in Attachment B. The construction referenced throughout this submission is referring to the inclusion of semi-circular rock dikes within RB2. ExxonMobil was unable to commence construction as earlier outlined in correspondence. Construction of the rock dikes or walls is expected in the second half of 2005.

LDEQ Comment:

521.J.1.b *The proposed number of samples (4) may not be sufficient to determine that all of the contamination has been removed from the impoundment. Additional samples should be taken from both the bottom of the impoundment and the sidewalls.*

The background samples should be taken from a location that has not been impacted by the operation of any waste disposal facility or process.

ExxonMobil's Response:

The current closure plan will be amended to include six sample points in addition to those performed at the bottom of the impoundment and the sidewalls (see Closure Plan replacement pages 1 and 5 included in Attachment B). As stated in Appendix J, background samples will be collected from soils characteristic of waste management areas.

Geological Review

LDEQ Comment:

521.D *According to the information submitted, it appears that the facility does not meet the minimum boring requirements of the Solid Waste Regulations as stipulated in LAC 33:VII.709.C.1.c.*

The borings should meet the minimum depth and sampling frequency requirements. All borings should be continuously sampled to at least thirty (30) feet below the base of excavation. At least tem percent of the borings (minimum of three borings) shall extend to 100 feet below the grade level to characterize the shallow geology.

Any additional boring should indicate where groundwater is first encountered.

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

LDEQ Comment:

521.D.1.a *Please provide geological cross-sections that incorporate all borings located in the vicinity of Rain Basin No. 2. Cross-sections should depict the monitoring well/piezometers, boring logs, and screen intervals. Please note that cross-sections should be developed for each transect of the boring grid pattern. Also note that cross-sections should show the maximum depth of the impoundments.*

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

LDEQ Comment:

521.D.1.b *No boring logs were found in Appendix D for borings M-8, DMS-3, and DMS-4.*

Please note that logs of all borings located in the vicinity of Rain Basin No. 2 shall be submitted.

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

LDEQ Comment:

521.E.1.a.iii *Please provide additional potentiometric data to discern any possible seasonal and temporal fluctuation in the groundwater flow direction beneath the impoundment. Typically, potentiometric data should be collected from the piezometers at least quarterly over a year period.*

The water level of the surface impoundment should be included on and used to develop potentiometric surface maps.

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

LDEQ Comment:

521.E.1.a.iv *Please note that radial flow if applicable needs to be discussed in the permit application.*

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

LDEQ Comment:

521.F.5.c *You must include justification of the parameters or constituents listed in Table 4-1 of your Sampling and Analysis Plan located in Appendix N. A complete chemical analysis of the sludge in the impoundment should be provided in order to determine the appropriate groundwater monitoring parameters.*

The Practicable Quantification Limit (PQL) for all parameters should be lower than or equal to the primary and secondary drinking water standards.

The following deficiencies/comments were noted in the Groundwater Monitoring Plan submitted in Appendix N of the document:

- *The Sampling and Analysis Plan in Appendix N combines groundwater monitoring programs for both Rain Basin No. 2 and the Wet Gas Scrubber Settling Ponds. Given that theses solid waste facilities are covered under separate permits, Sampling and Analysis Plans for each must be separate documents.*
- *QA/QC measures such as the use of field blanks and laboratory spikes and blanks must be mentioned in detail in your Sampling and Analysis Plan.*
- *The total depth of each well shall be determined during each sampling event.*
- *All purge water during sampling events shall be disposed of properly.*

All groundwater monitoring reports should include scaled potentiometric surface maps showing monitoring well locations and groundwater elevations with respect to mean sea level.

ExxonMobil's Response:

This LDEQ comment was previously provided to ExxonMobil pursuant to a meeting held on November 20, 2003. A detailed and reviewed response was provided in the July 2004 submission.

Miscellaneous Correspondence

Attachment A

Incorporated into submittal

Replacement Pages

Attachment B

Incorporated into submittal

DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

MAR 31 2006

CERTIFIED MAIL 7004 1160 0000 3793 9383

William D. Fellows, Environmental Manager
ExxonMobil Refining and Supply
P.O. Box 551
Baton Rouge, LA 70821

Re: Notice of Deficiencies-Technical Review # 2
Rain Basin No.2
AI #2638/GD-033-0596/P-0273/ PER20020001
East Baton Rouge

Dear Mr. Fellows:

The Water and Waste Permits Division has performed the technical review of your response to the November 18, 2004, NODs submitted on January 21, 2005. The submittal has been determined to be deficient and not in compliance with LAC 33:VII. The deficiencies are outlined below:

Permit Writer Comments:

521.B.1.c	Please state that no storage, processing or disposal of solid waste will occur within the Buffer Zone.
521.H.1.f	Please provide qualifications and certifications that the Baton Rouge Area Mutual Aid System (BRAMAS) can meet the standards set forth in LaR.S.30:2157.D.

Engineering Comments:

521.C.1.a	Please provide an explanation why the facility does not experience surface drainage.
521.C.1.e	Provide measures to be taken to ensure that flooding (high river stage) does not result in the washout of solid waste.

ENVIRONMENTAL SERVICES
: PO BOX 4313, BATON ROUGE, LA 70821-4313
P:225-219-3181 F:225-219-3309
WWW.DEQ.LOUISIANA.GOV

521.J.1.b The closure plan replacement pages do not agree with the response to this comment. In particular, the response states an additional six samples will be taken in addition to those performed at the bottom and sidewalls of the impoundment. The closure plan only refers to six surface samples.

All samples should be taken from the bottom or sidewall of the impoundment. Also, background samples shall be taken from a location that has not been impacted by the operation of any waste disposal facility or process.

Your response to these deficiencies shall be sent to this office within thirty (30) days of receipt of this letter. Additionally, four (4) copies of your response, including appendices, shall be provided. Failure to respond to these deficiencies as described as well as failure or refusal to comply with this notice may result in a permit denial and appropriate enforcement actions may be taken under the applicable regulatory and statutory provisions.

Please reference Agency Interest (AI 2638), Site Identification Number (GD-033-0596), Permit Number (P-0273) and Permit Activity Number (PER20020001) on all future correspondence pertaining to this permit activity. If you have any questions concerning this matter, please contact Mr. Timothy Smith of the Solid and Hazardous Waste Permits Section at (225) 219-0029 or Mr. Jason Meyers, Environmental Technology, Engineering Group 4 at (225) 219-3459.

Sincerely,

Lenny M. Young

Lenny Young
Administrator
Water and Waste Permits Division

ts

c: Jason Meyers, OEA, ETD

ExxonMobil
Refining and Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

W. D. Fellows
Environmental Manager

ExxonMobil
Refining & Supply

April 28, 2006

Mr. Michael Vince
Louisiana Department of Environmental Quality
Office of Environmental Services, Permits Division
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

Certified Mail: 7004 1350 0000 4274 3372

RE: Notice of Deficiencies
Solid Waste Mandatory Modification Document Permit Renewal Application
Rain Basin No. 2
ExxonMobil Refining & Supply Company
Facility No. GD-033-0596
Solid Waste Permit No. P-0273
Agency Interest Number 2638
Activity Number PER20020001
Baton Rouge Refinery
Baton Rouge, East Baton Rouge Parish, Louisiana

Dear Mr. Vince:

This letter is in response to the Notice of Deficiencies (NODs) provided to ExxonMobil on March 31, 2006 from the Permits Division. ExxonMobil is submitting the appropriate information to satisfy the applicable requirements in the Solid Waste Mandatory Modification Document Permit Renewal Application submitted in July 2004.

This NOD submission includes comment responses and replacement pages to be inserted into the permit renewal application. Additionally, some Louisiana Department of Environmental Quality (LDEQ) requests were already addressed in the 2004 application and in the 2005 NOD replacement page submissions.

ExxonMobil is hopeful that the responses to the department's comments will provide for an easier permit review process by the LDEQ.

Please contact Ron Dunham at (225) 977-4860 if you have any questions in regard to this submittal.

Very Truly Yours,

W D Fellows

Enclosure

JGA:thf

0025532/2723BRltr.DOC

Notice of Deficiencies Responses
Updated Louisiana Solid Waste Permit Mandatory Modification Document
Rain Basin No. 2
ExxonMobil Refining & Supply Company
Facility No. GD-033-0596
Solid Waste Permit No. P-0273
Agency Interest No. 2638
Activity No. PER20020001
Baton Rouge Refinery
Baton Rouge, East Baton Rouge Parish, Louisiana

Permit Writer Review

LDEQ Comment:

521.B.1.c *Please state that no storage, processing or disposal of solid waste occur within the Buffer Zone.*

ExxonMobil's Response:

The natural and artificial barriers that constitute the buffer zone do not conduct the above mentioned activities. Incidental staging prior to transport occurs following occasional maintenance and cleaning of the waste water treatment operations (Attachment Replacement Page B-5).

LDEQ Comment:

521.H.1.f *Please provide qualifications and certifications that the Baton Rouge Area Mutual Aid System (BRAMAS) can meet the standards set forth in LaR.S.30:2157.D*

ExxonMobil's Response:

The charter for BRAMAS organization is "to develop, maintain and improve procedures among the members for mutual assistance and cooperation in the control of emergencies and disasters such as fires, spills, explosions, and releases of toxic substances." Response personnel and BRAMAS members are some of the most highly trained professionals in the Baton Rouge area, such as our current Baton Rouge Police Department Chief. The Baton Rouge Fire Chief, Assistant Chief, and other officers receive training in the many aspects of hazardous materials response. "All nine (9) of the officers, along with the Fire Chief and Assistant Fire Chief of the division are certified by the Louisiana Fire Fighter Certification Program as Hazardous Materials Technicians which meets or exceeds NFPA standards" (http://brgov.com/dept/Fire/hazardous.htm).

LDEQ Comment:

521.C.1.a *Please provide an explanation of why the facility does not experience surface drainage.*

ExxonMobil's Response:

This requirement is not applicable because surface drainage at the Baton Rouge Refinery is controlled through an underground sewer network and therefore does not experience surface drainage. Per LAC 33.VII.713.A.6, the existing surface impoundments are not required to comply with the regulations relative to surface-run-off-diversion or surface-run-off-devices (Attachment Replacement Page C-1).

LDEQ Comment:

521.C.1.e *Provide measures to be taken to ensure that flooding (high river stage) does not result in the washout of solid waste.*

ExxonMobil's Response:

As stated in the application, all discharges are managed under the current NPDES permit. Per LAC 33.VII.713.A.6, the existing surface impoundments are not required to comply with the regulations relative to restricting the 100-year base flood flow and temporary water-storage capacity of the flood plain. Furthermore as stated, a rare flood occurrence will not result in an increase in harmful solids to the surrounding area, since by the time flooding occurs, the character of the flood waters and storm waters inside Rain Basin 2 would be nearly identical because of storm dilution (Attachment Replacement Page C-3).

LDEQ Comment:

521.J.1.b *The closure plan replacement pages do not agree with the response to this comment. In particular, the response states an additional six samples will be taken in addition to those performed at the bottom and sidewalls of the impoundment. The closure plan only refers to six surface samples.*

All samples should be taken from the bottom or sidewall of the impoundment. Also, background samples shall be taken from a location that has not been impacted by the operation of any waste disposal facility or process.

ExxonMobil's Response:

The current closure plan has been amended to include six sample points (two from the bottom and four from the sidewall of the impoundment) in addition to background samples (see Appendix J Replacement Pages 4, 5 and Table 2). As stated in Appendix J, background samples will be collected from uncontaminated locations with soils that are characteristic of waste management areas.

Replacement Pages
Attachment A

Incorporated into submittal

DEPARTMENT OF ENVIRONMENTAL QUALITY

KATHLEEN BABINEAUX BLANCO
GOVERNOR

MIKE D. McDANIEL, Ph.D.
SECRETARY

JUN 29 2006

William D. Fellows, Environmental Manager
ExxonMobil Refining and Supply
P.O. Box 551
Baton Rouge, LA 70821

Re: Exemption Request
Wet Gas Scrubber Settling Pond
Exxon Refining & Supply Company
AI #2638/GD-033-0596/P-0274/ PER20060004
East Baton Rouge

RECEIVED
JUL 07 2006
By

Dear Mr. Fellows:

We have reviewed your request for an exemption from the regulatory citation LAC 33:VII.521.A.2.c which requires you to provide a Utilities Scale Map. The Department recognizes this facility as an existing facility as defined by the Solid Waste Regulations. The compliance record of the facility indicates that in the past the facility has operated in accordance with its permit conditions.

The proposed operation of the facility as reflected by the permit application indicates your intent to continue operation of the facility in a manner protective of human health and the environment. In consideration of the foregoing facts, an exemption is hereby granted to the regulatory citation LAC 33:VII.521.A.2.c as allowed by these regulations.

Please reference Agency Interest (AI 2638), Site Identification Number (GD-033-0596), Permit Number (P-0274) and Permit Activity Number (PER20060004) on all future correspondence pertaining to this permit activity. If you have any questions concerning this matter, please contact Mr. Timothy Smith of the Waste Permits Division at (225) 219-0029.

Sincerely,

Chuck Carr Brown, Ph.D.
Assistant Secretary

ts

c: ERM

ENVIRONMENTAL **SERVICES**
: PO BOX 4313, BATON ROUGE, LA 70821-4313
P:225-219-3181 F:225-219-3309
WWW.DEQ.LOUISIANA.GOV

[TAL C.TY PRESS

Publisher of
THE ADVOCATE

)OF OF PUBLICATION

he hereto attached notice was
published in THE ADVOCATE,
y newspaper of general circulation
ished in Baton Rouge, Louisiana,
and the official Journal
of the State of Louisiana,
the City of Baton Rouge,
the Parish of East Baton Rouge,
in the following issues:

02/24/06

a Bush, Public Notices Clerk

n and subscribed before me by the
:on whose signature appears above:

February 24, 2006

en Singley, Notary Public, #65565
Commission Expires: Indefinite
Baton Rouge, Louisiana

Public Notice

Public Notification of Exemption Request
ExxonMobil Refining & Supply Company
EPA ID A Number LAD 062 662 887
Baton Rouge,
East Baton Rouge Parish, Louisiana

The ExxonMobil Refining & Supply Company (ExxonMobil) has requested an exemption from specific citations within the Solid Waste Regulations requesting utility scale maps showing the location of all pipelines, power lines, and right-of-ways within the site. This notice satisfies the requirement of the LAC 33:VII.307.C.1 for solid waste permit renewal applications P-0273 and P-0274.

Please contact Richard Cotton (225) 977-8337 if you have any questions in regard to this exemption request.

3272611-feb 24-1t

)N UGE 3272611
ARNOLD
RWOOD FOREST #300
JGE LA 70816

LDEQ Modifications Letter

Attachment B

July 2004

W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

State of Louisiana

Department of Environmental Quality

Edwin W. Edwards
Governor

May 5, 1993

Kai David Midboe
Secretary

To: Solid and Industrial Waste Permit
Applicants and Permit Holders

From: Thomas H. Patterson
Program Manager
Permit Section

The new Solid Waste Regulations, which became effective on February 20, 1993, require permit holders and applicants to submit additional information to the department for review.

In an effort to reduce the amount of time needed to process these modifications, the Solid Waste Division requests that all mandatory modifications of permit applications submitted in response to LAC 33:VII.315 be prepared as follows:

1. Please incorporate all mandatory modifications or additions made in response to LAC 33:VII.315. into a new document (permit application). This document should incorporate all previous text, previously approved modifications, modifications pending review, new mandatory modifications, and new voluntary modifications.

2. Underline all mandatory modifications and additions submitted in response to LAC 33:VII.315. to distinguish additions from original text.

3. Please number the new document according to the Solid Waste Regulations promulgated February 20, 1993 as amended.

4. Identify all drawings and photographs using the regulation or exhibit number referenced in the amended text.

5. Please provide a list of all modifications and additions made in response to LAC 33:VII.315. Any previously approved modification which satisfies a mandatory modification requirement should also be included on this list.

6. All previously approved modifications shall be incorporated into the rewrite but not otherwise highlighted. Please supply a list of all previously approved modifications and deletions in addition to the list required in Item #5.

7. Please provide a list of all new non-mandatory/voluntary modifications which are submitted for the first time in this document. This list should be separate from lists required in Item 5 & 6.

OFFICE OF SOLID AND HAZARDOUS WASTE SOLID WASTE DIVISION P.O. BOX 82178 BATON ROUGE, LOUISIANA 70884-2178

TELEPHONE (504) 765-0249 FAX (504) 765-0299

Type II Facilities will be issued an Order to allow these facilities to implement those items required by LAC 33:VII.315.G prior to any mandatory modification deadline. The required items include considerations for airports, restriction of public access, hazardous waste exclusion, discharges to surface water, unstable areas, 100-year floodplains, run-on/run-off control, daily cover, open burning, methane monitoring and vector control. Permit modifications to propose and include site specific plans for these items may follow in accordance with the mandatory modification schedule for Type II facilities.

Please note that all mandatory modifications must be accompanied by a fee of $500, according to LAC 33:VII.525. This fee does not include voluntary modifications.

Voluntary modifications and mandatory modifications may be submitted together with a fee of $1,000 according to LAC 33:VII.525.C.

For the convenience of both permit applicant and the department, any future modifications will be managed by replacing applicable pages.

Should you require any additional information regarding this matter, please contact your DEQ facility manager or myself at (504)765-0257 at your convenience.

THP:wl

Solid Waste Permit Application Form

Part I

July 2004

W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

LAC 33:VII.519
SOLID WASTE STANDARD PERMIT APPLICATION - PART I

(The form shall be completed in accordance with the instructions found in LAC 33:VII.513.A.1)

A. Applicant (Permit Holder): ExxonMobil Refining & Supply Company (a division of ExxonMobil Corporation) Rain Basin 2

B. Facility Name: ExxonMobil, Baton Rouge Refinery

C. Facility Location/Description: 4045 Scenic Highway Baton Rouge, Louisiana 70805

D. Location: Sections 44 Township 6 South Range 1 West of St. Helena Meridian

Parish: East Baton Rouge

Coordinates: Latitude Degrees 30 Minutes 28 Seconds 30 North

Longitude Degrees 91 Minutes 11 Seconds 45 West

E. Mailing Address: P.O. Box 551, Baton Rouge, LA 70821

F. Contact: William D. Fellows

G. Telephone: (225) 977-8430

H. Type and Purpose of Operation: (check each applicable line)

Type I	Industrial Landfill	___
	Industrial Surface Impoundment	X
	Industrial Landfarm	___
Type I-A	Industrial Incinerator Waste Handling Facility	___
	Industrial Shredder/Compactor/Baler	___
	Industrial Transfer Station	___
Type II	Sanitary Landfill	___
	Residential/Commercial Surface Impoundment	___
	Residential Commercial Landfarm	___
Type II-A	Residential/Commercial Incinerator Waste Handling Facility	___
	Residential/Commercial Shredder/Compact/Baler	___
	Residential/Commercial Transfer Station	___
	Residential/Commercial Refuse-derived Fuel	___
Type III	Construction/Demolition-debris Landfill	___
	Woodwaste Landfill	___
	Compost Facility	___
	Resource Recovery/Recycling Facility	___

Other

Describe: _____

_____

I. Site Status: Owned _X_ Leased ___ Lease Term ___ Years

(Note: If leased, provide copy of lease agreement)

J. Operations Status: Existing _X_ Proposed

K. Total Acres _Approx. 5.5_ Processing Acres _____ Disposal Acres _Approx. 5.5

L. Environmental Permits: (List)

A. Permit Type	B. Permit Number	C. Description
NPDES (402)	LA0005584	
N	LAR050000	
N	LA0005568	
N	LAR05N342	
N	LAR200000	
E	P-0273	Solid Waste
E	P-0274	Solid Waste
E	P-0325	Solid Waste
Air	2275-VO	Pipestills
Air	2234-VO	Cokers
Air	2385-VO	CAT Complex
Air	2589-VO	Light Ends
Air	2447	HHLA
Air	2176-VO	Clean Gasoline
Air	PSD-LA-667	Clean Gasoline
Air	2300 (M-1)	Sulfur Unit
Air	234 (M-2)	Lubes extraction
Air	2296	Light Oils
Air	2363	WCLA
Air	(M-2)	Sludge Drier
Air	3120-00056-VO	ATF
Air	2815-VO	Tank Cleaning Pump
Air	2047	MVR

M. Conformity with regional plans. Attach letter from the Louisiana Resource Recovery and Development Authority (LRRDA) stating that the facility is an acceptable part of the state-wide program.

See Attachment A.

(Note: In accordance with R.S. 30:2307.B, LRRDA authority does not apply to solid waste disposal activity occurring entirely within the boundaries of a plant, industry, or business which generates such solid waste).

N. Zoned: Yes X No ___ Zoning Requested ___

Zone Classification: Industrial

(Note: If zoned, include zoning affidavit and/or other documentation stating that the proposed use does not violate existing land-use requirements).

O. Types, Quantities, and Sources of Waste:

	Processing		Disposal	
	On-Site	Off-Site	On-Site	Off-Site
Residential	N/A	N/A	N/A	N/A
Industrial			2.9 (tons/week)	
Commercial				
Other	N/A	N/A	N/A	N/A

P. Service Area: NA

List of Parishes: NA

Statewide NA Unlimited NA

Q. Proof of Operator's Public Notice: Attach proof of publication of the notice regarding the permit application submittal as required by LAC 33:VII.513.A.
See Attachment B.

R. Certification: I have personally examined and am familiar with the information submitted in the attached document, and I hereby certify under penalty of law that this information is true, accurate, and complete to the best of my knowledge. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/or imprisonment.

Signature WD Fellows

Date July 14, 2004

Typed Name and Title William D. Fellows/Refinery Contact

S. Any additional information required by the administrative authority.
(Note: Attach proof of the legal authority of the signee to sign for the applicant).
See Attachment C.

Louisiana Resource Recovery and Development Authority Documentation

Attachment A

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

Office of the Planning Commission

City of Baton Rouge and Parish of East Baton Rouge
Post Office Box 1471, Baton Rouge, Louisiana 70821
or
1755 Florida Street, 3rd Floor, Baton Rouge, LA 70802
Phone (225) 389-3144 Fax (225) 389-5342

Troy L. Bunch, FASLA
Planning Director

April 19, 2007

Ms. Angie Jones, Environmental Scientist
ERM Southwest Inc.
3838 N. Causeway Boulevard, Suite 2725
Metairie, LA 70002

Dear Ms. Jones:

Attached, as you requested, please find a map of size 17 by 22 inches; in PDF format, of Existing Land Use in a three mile area surrounding 4045 Scenic Highway, an address in East Baton Rouge Parish. Please contact our office if you have questions regarding this information.

Sincerely,

Troy L. Bunch, FASLA
Planning Director

TLB/VV/dtb

Attachment

c: Ellen A. Miller, Assistant Planning Director
Nagajyothi Swargam, GIS Manager

ATTACHMENT A

EXISTING LAND USE

MAP OF

THREE MILES AREA AROUND

4045 SCENIC HWY

IN

EAST BATON ROUGE PARISH

APRIL 2007

CPPC

State of Louisiana

EDWIN W. EDWARDS
GOVERNOR
B. JIM PORTER
SECRETARY

DEPARTMENT OF NATURAL RESOURCES

MICHAEL J. BOURGEOIS
DEPUTY SECRETARY

May 22, 1985

L. Kronenberger
Exxon Company, U.S.A.
P. O. Box 551
Baton Rouge, LA 70821

RE: Solid Waste Permit Applications
Wastewater Treatment Impoundments
East Baton Rouge Parish, Louisiana

Dear Mr. Kronenberger:

The Louisiana Resource Recovery and Development Authority (LRRDA) is investigating the feasibility of constructing regional waste facilities in several locations in the state as an environmentally acceptable means of solving the state's solid waste disposal problem.

At present time, the Louisiana Resource Recovery and Development Authority has no plans for the development of a waste-to-energy facility in the E. Baton Rouge Parish area. Therefore, if the Wastewater Treatment Impoundments referenced above meets state and federal regulations, the facility is acceptable to LRRDA.

Sincerely,

V. H. Tompkins
Acting Program Administrator

VHT/lr

Public Notice

Attachment B

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

Public Notice
Of
Intent to Submit Mandatory Modification Document
For Permit Number P-0273
ExxonMobil Refining & Supply Company
Agency Interest No. 2638
Facility Identification No. GD-033-0596
Permit Activity No. PER20020001
4045 Scenic Highway, Baton Rouge
East Baton Rouge Parish, Louisiana

Notice is hereby given that ExxonMobil Baton Rouge Refinery intends to submit to the Department of Environmental Quality, Office of Environmental Services, Water and Waste Permits Division, a Mandatory Modification Document for the Rain Basin 2, Solid Waste Permit number P-0273. The Rain Basin 2 surface impoundment is located in East Baton Rouge Parish, Range- West of St. Helena Meridian, Township- 6 South, Section- 44, which is located along the east bank of the Mississippi River in northwestern Baton Rouge, Louisiana.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address.

Louisiana Department of Environmental Quality
Office of Environmental Services
Water and Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

3606364 - Apr 18 -11

Public Notices Bids/Proposals 7420

Public Notice Of Intent to Submit Mandatory Modification Document For Permit Number P-0273
ExxonMobil Refining & Supply Company
Agency Interest No. 2638
Facility Identification No. GD-033-0596
Permit Activity No. PER20020001
4045 Scenic Highway, Baton Rouge
East Baton Rouge Parish, Louisiana

Notice is hereby given that ExxonMobil Baton Rouge Refinery intends to submit to the Department of Environmental Quality, Office of Environmental Services, Water and Waste Permits Division, a Mandatory Modification Document for the Rain Basin 2, Solid Waste Permit number P-0273. The Rain Basin 2 surface impoundment is located in East Baton Rouge Parish, Range- West of St. Helena Meridian, Township- 6 South, Section- 44, which is located along the east bank of the Mississippi River in northwestern Baton Rouge, Louisiana.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Office of Environmental Services
Water and Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

3606364 - Apr 18 -1t

PUBLIC NOTICE
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ)
ROYAL FIBERGLASS POOLS, INC.
PROPOSED PART 70 AIR OPERATING PERMIT MODIFICATION

The LDEQ, Office of Environmental Services, is accepting written comments on Part 70 Air Operating Permit Modification for Royal Fiberglass Pools, Inc., 1407 Anse Broussard Hwy Breaux Bridge, LA for the Breaux Bridge Terminal 1. The facility is located at 1407 Anse Broussard Hwy Breaux Bridge, St. Martin Parish.

The Royal Fiberglass Pools Inc., Breaux Bridge Terminal 1 manufactures one-piece fiberglass swimming pools using the hand-lay-up technique and currently operates under Permit No. 2820-00043-V1 dated April 12, 2006.

Royal Fiberglass Pools, Inc. requested a Part 70 Air Operating Permit Modification.

Estimated emissions from this facility in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	0.11	0.11	-
VOC	40.67	45.60*	+4.93

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):			
Pollutant	Before	After	Change
Dimethyl phthalate	0.00	0.001	+0.001
Methyl ethyl ketone	0.18	0.18	-
Methyl methacrylate	6.31	2.71	-3.60
Styrene	34.09	42.63	+8.54
Total VOC	40.67	45.6	+4.93

A technical review of the working draft of the proposed permit was submitted to the facility representative and the LDEQ Surveillance Division. Any remarks received during the technical review will be addressed in the "Worksheet for Technical Review of Working Draft of Proposed Permit". All remarks received by LDEQ are included in the record that is available for public review.

Written comments, written requests for a public hearing or written requests for notification of the final decision regarding this permit action may be submitted to Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. Written comments and/or written requests *must be received by 12:30 p.m., Wednesday, May 23, 2007.* Written comments will be considered prior to a final permit decision.

If LDEQ finds a significant degree of public interest, a public hearing will be held. LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The permit application, proposed permit and statement of basis are available for review at the LDEQ, Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, LA. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). The available information can also be accessed electronically on the Electronic Document Management System (EDMS) on the DEQ public website at www.deq.louisiana.gov.

Additional copies may be reviewed at the St. Martin Parish Library - Breaux Bridge Branch located at 102 Courthouse Street, Breaux Bridge, LA 70517.

Inquiries or requests for additional information regarding this permit action should be directed to Mr. Mark Browning, LDEQ, Air Permits Division, P.O. Box 4313, Baton Rouge, LA 70821-4313, phone (225) 219-3069.

Persons wishing to be included on the LDEQ permit public notice mailing list or for other public participation related questions should contact the Public Participation Group in writing at LDEQ, P.O. Box 4313, Baton Rouge, LA 70821-4313, by email at maillistrequest@ldeq.org or contact the LDEQ Customer Service Center at (225) 219-LDEQ (219-5337).

Permit public notices including electronic access to the proposed permit and statement of basis can be viewed at the LDEQ permits public notice webpage at www.deq.state.la.us/news/PubNotice/ and general information related to the public participation in permitting activities can be viewed at www.deq.louisiana.gov/portal/tabid/2198/Default.aspx.

Alternatively, individuals may elect to receive the permit public notices via email by subscribing to the LDEQ permits public notice List Server at http://www.state.la.us/ldbc/listservpage/ldeq_pn_listserv.htm.

All correspondence should specify AI Number 32865, Permit Number 2820-00043-V2, and Activity Number PER20060001.

3603826-apr 18-1t

PUBLIC NOTICE
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ)
BOLLINGER LAROSE, LLC
PROPOSED PART 70 AIR OPERATING PERMIT MODIFICATION AND RENEWAL

The LDEQ, Office of Environmental Services, is accepting written comments on the proposed Part 70 air operating permit modification and renewal for Bollinger Larose, LLC, P.O. Box 1410, Larose, LA 70373 for the Bollinger Larose facility. The facility is located at 1515 Hwy 24, Larose, Lafourche Parish.

Bollinger Larose, LLC requested to:
- Establish a cap on the Toxic Air Pollutant (TAP) emissions produced by the facility
- Increase the amount of blast media used by the Abrasive Blasting source (ARE 2)
- Increase the amount of paint used in the Painting Operations (ARE 1)
- Increase the capacity of the Welding (ARE 3) and Metal Cutting Operations (ARE 4)
- Increase the amount of diesel and heavy oil truck loading from the Truck Loading source (FUG 1)
- Increase the hours of operation of the Diesel Generator Engine (EQT 12)
- Reconcile various items.

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	2.66	33.48	+ 30.82
SO_2	-	2.70	+ 2.70
NO_X	0.20	46.69	+ 46.49
CO	0.03	10.15	+ 10.12
VOC	43.35	54.55	+ 11.20
Toxic Air Pollutants**	29.64	40.42*	+ 10.78

*Aggregate emissions of all TAPs shall be limited to 40.42 tons per year. The permittee may emit any TAP, not specifically listed, at a rate below its Minimum Emission Rate (MER).

**Toxic compounds include the following compounds whose change is above the Minimum Emission Rate (MER) listed in LAC 33:III.Chapter 51, Table 51.1: Barium (and compounds), Chromium VI (and compounds), copper (and compounds), dibutyl phthalate, manganese (and compounds), n-butyl alcohol, nickel (and compounds), and zinc (and compounds).

A technical review of the working draft of the proposed permit was submitted to the facility representative and the LDEQ Surveillance Division. Any remarks received during the technical review will be addressed in the "Worksheet for Technical Review of Working Draft of Proposed Permit". All remarks received by LDEQ are included in the record that is available for public review.

Written comments, written requests for a public hearing or written requests for notification of the final decision regarding this permit action may be submitted to Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. Written comments and/or written requests must be received by 12:30 p.m., Wednesday, May 23, 2007. Written comments will be considered prior to a final permit decision.

If LDEQ finds a significant degree of public interest, a public hearing will be held. LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The proposed Part 70 air operating permit modification and renewal application, statement of basis and environmental assessment questions available for review at the LDEQ, Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, LA. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). The available information can also be accessed electronically on the Electronic Document Management System (EDMS) on the DEQ public website at www.deq.louisiana.gov.

An additional copy may be reviewed at the Lafourche Parish Library- Larose Branch, 307 East 5th Street, Larose, LA.

Inquiries or requests for additional information regarding this permit action should be directed to Dustin Duhon, LDEQ, Air Permits Division, P.O. Box 4313, Baton Rouge, LA 70821-4313, phone (225) 219-3057.

Persons wishing to be included on the LDEQ permit public notice mailing list or for other public participation related questions should contact the Public Participation Group in writing at *LDEQ, P.O. Box 4313, Baton Rouge, LA 70821-4313*, by email at maillistrequest@ldeq.org or contact the LDEQ Customer Service Center at (225) 219-LDEQ (219-5337).

Permit public notices including electronic access to the proposed permit and statement of basis can be viewed at the LDEQ permits public notice webpage at www.deq.state.la.us/news/PubNotice/ and general information related to the public participation in permitting activities can be viewed at www.deq.louisiana.gov/portal/tabid/2198/Default.aspx.

Alternatively, individuals may elect to receive the permit public notices via email by subscribing to the LDEQ permits public notice List Server at http://www.state.la.us/ldbc/listservpage/ldeq_pn_listserv.htm.

All correspondence should specify AI Number 40832, Permit Number 1560-00049-V1, and Activity Number PER20030001.

3606363-Apr18-1t

CAPITAL CITY PRESS

Publisher of

STATE-TIMES

PROOF OF PUBLICATION

The hereto attached notice was published in the STATE-TIMES, a daily newspaper of general circulation, published in Baton Rouge, Louisiana, and the Official Journal of the State of Louisiana, the City of Baton Rouge and the Parish of East Baton Rouge, in the issues of:

May 9, 10, 12, 1986

Advertising Representative

Sworn and subscribed before me by the person whose signature appears above in Baton Rouge, La. on this

12 day of May 19 86 AD.

Notary Public

My Commission Expires: Indefinite

PUBLIC NOTICE

Notice is hereby given that Exxon Company, USA, Baton Rouge Refinery, is applying to the Solid Waste Management Division of the Department of Environmental Quality for standard permits to operate industrial solid waste surface impoundments. The facilities are located in East Baton Rouge Parish at Section 44, Township 6 South, Range 1 West, 4045 Scenic Highway, in the city of Baton Rouge, and at Section 69, Township 6 South, Range 1 West, LA 19, approximately two miles north of Scotlandville.

Comments concerning the application may be filed with the Louisiana Department of Environmental Quality at the following address:

Mr. Gerald Healy, Jr.
Administrator
Solid Waste Management
Division
Louisiana Department
of Environmental Quality
P.O. Box 44066
Baton Rouge, Louisiana 70804-4066

Telephone: 504-342-1216

ST-23004—May 9-10-12-3t

23004
Solid Waste

Proof of Legal Authority

Attachment C

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

IPA-7A-73
Incumbent Power of Attorney

KNOW ALL MEN BY THESE PRESENTS:

THAT EXXON CORPORATION, a New Jersey corporation, having an office in Houston, Texas, acting by and through M. A. Wright, as Chairman and Chief Executive of Exxon Company, U.S.A., a division of Exxon Corporation (hereinafter called "Company"), and as Executive Vice President of Exxon Corporation, does hereby nominate, constitute and appoint each incumbent of each of the following positions in said Company:

Refining Department	Refinery Managers; and Plant Managers

as Agent and Attorney-in-Fact of Exxon Corporation for purposes of executing and delivering instruments and documents as more particularly described below, and does hereby grant, delegate and invest each of said incumbents with power and authority to execute and deliver for, in the name and on behalf of Exxon Corporation, and in connection with the business and affairs of said Company, instruments and documents of any and every nature, including, but not by way of limitation, instruments pledging the credit of Exxon Corporation, bonds of indemnity, other indemnities, guaranties, affidavits, licenses, permits, applications for licenses or permits, other governmental documents, bids, collective bargaining agreements, other contracts, deeds of conveyance, encumbrances, leases, releases, discharges of mortgages or deeds of trust, assignments, transfers of leasehold estates and/or other interests in real and/or personal property, and any other instrument or document as may be required or desired in the conduct of the business of said Company, whether similar or dissimilar to the foregoing, EXCEPT the following:

1. Any mortgage, assignment, conveyance or release to any third party of any oil, gas, and/or mineral lease or any other interest in oil, gas and/or other minerals which is severed from the surface and which is owned by or leased to Exxon Corporation;

2. Any mortgage, assignment, conveyance, or release of other real property or equipment valued at more than one hundred thousand dollars by any taxing authority;

3. Any instrument authorizing, permitting or evidencing the borrowing of money from any person or entity; or

4. Any instrument delegating the power and authority conferred herein to execute and deliver instruments.

Each incumbent of each said position in said Company may exercise the power and authority herein granted, delegated and invested, in any particular and appropriate transaction or matter, either as an Attorney-in-Fact of Exxon Corporation or as an official of said Company. Any action taken as authorized under this Incumbent Power of Attorney shall be an act of Exxon Corporation and binding upon it.

Certificates of incumbency and evidencing authority relating to particular transactions or matters may be issued by the Secretary or any Assistant Secretary of Exxon Corporation and may be relied upon by third parties dealing with Exxon Corporation or with said Company. Such Certificates shall certify that, on the dates set out therein, the individual named therein was an incumbent of one of said positions in said Company; that the execution and delivery by such person of particular instruments or documents was

authorized by this Incumbent Power of Attorney; and that this Incumbent Power of Attorney was in effect at the time of such execution and delivery.

APPROVED AND EXECUTED this 1st day of January, 1973.

EXXON CORPORATION

By _____
Chairman and Chief Executive of
Exxon Company, U.S.A. and
Executive Vice President of
Exxon Corporation

ATTEST:

_____
Assistant Secretary

STATE OF CALIFORNIA

COUNTY OF ORANGE

On this 1st day of January, in the year 1973, before me, a Notary Public of said State, duly commissioned and sworn, personally appeared M. A. Wright, known to me to be Chairman and Chief Executive of Exxon Company, U.S.A. (a division of Exxon Corporation) and an Executive Vice President of Exxon Corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

_____
Notary Public in and for said State

OFFICIAL SEAL
WILLIAM J. ZANONE
Notary Public California
Principal Office in
Los Angeles County
My Commission Expires Nov. 29, 1975

Solid Waste Permit Application

Part II

July 2004

W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

MANDATORY MODIFICATION DOCUMENT
LOUISIANA SOLID WASTE PERMIT APPLICATION
PART II

ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

INTRODUCTION

Background

ExxonMobil Refining & Supply Company (a division of Exxon Mobil Corporation) has prepared this solid waste permit mandatory modification document (MMD) for Rain Basin 2 operated at ExxonMobil's Refinery, located in Baton Rouge, Louisiana. This application has been prepared in conformance with the Louisiana Solid Waste Regulations promulgated December 31,2003 and with the Louisiana Department of Environmental Quality (LDEQ) letter dated May 5, 1993 to all Louisiana Solid Waste Permit Applicants and Permit Holders. All chapters included in the Louisiana Solid Waste Regulations have been reviewed for applicability during the preparation of this document. All applicable chapters have been addressed and all non-applicable chapters are listed as such (Attachment A).

Pursuant to LAC 33:VII.519, this application includes a completed Part I Form. Pursuant to LAC 33:VII.521, this application contains a completed Part II formatted to conform with the numbering system used in Section 521 of the Solid Waste Regulations to facilitate evaluation. Pursuant to LAC 33:VII.523, this application contains a completed Part III. Each response in Parts II and III is preceded by its corresponding regulatory passage in boldface to further improve ease of evaluation.

Environmental Regulatory Codes-
List of Applicable Chapters

Attachment A

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

Ch.1 General Provisions and Definitions

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 1 Regulations.

Ch.3 Scope and Mandatory Provisions of the Program

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 3 Regulations.

Ch.5 Solid Waste Management System

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 5 Regulations. ExxonMobil will also comply with all applicable sections listed under Chapter 5. The applicable sections addressed by this document are:

517 Permit Modifications
519 Part I: Permit Application Form
520 Compliance Information
521 Part II: Supplementary Information,
All Processing and Disposal Facilities
523 Part III: Additional Supplementary Information
525 Standard Permit Application Fee Review

Ch.7 Solid Waste Standards

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 7 Regulations. ExxonMobil will also comply with all applicable sections listed under Chapter 7. The sections addressed by this document are:

709 Standards Governing All Solid Waste Disposal Facilities
(Type I and II)
713 Standards Governing Surface Impoundments
727 Financial Assurance

Ch.9 Enforcement

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 9 Regulations.

Ch.11 Beneficial-Use Facilities

ExxonMobil Response:
The regulations listed under Chapter 11 are not applicable to the ExxonMobil facility.

Ch. 13 Statewide Beautification

ExxonMobil Response:
The regulations listed under Chapter 13 are not applicable to the ExxonMobil facility.

Ch.30 Appendices

ExxonMobil Response:
ExxonMobil will comply with all general provisions listed under Chapter 30 Regulations.

Ch.103 Recycling and Waste Reduction Rules

ExxonMobil Response:
The regulations listed under Chapter 103 are not applicable to the ExxonMobil facility.

Ch.104 Credit for Recycling Equipment

ExxonMobil Response:
The regulations listed under Chapter 104 are not applicable to the ExxonMobil facility.

Ch.105 Waste Tires

ExxonMobil Response:
The regulations listed under Chapter 105 are not applicable to the ExxonMobil facility.

Ch.111 Appendices

ExxonMobil Response:
The regulations listed under Chapter 111 are not applicable to the ExxonMobil facility.

LAC 33:VII.521
PART II: SUPPLEMENTARY INFORMATION, ALL PROCESSING, AND DISPOSAL FACILITIES

A. LOCATION CHARACTERISTICS

Standards pertaining to location characteristics are contained in LAC 33:VII.709.A (Type I and II facilities), LAC 33:VII.717.A (Type I-A and II-A facilities), and LAC 33.719.A (Type III facilities).

1. **The following information on location characteristics is required for all facilities:**

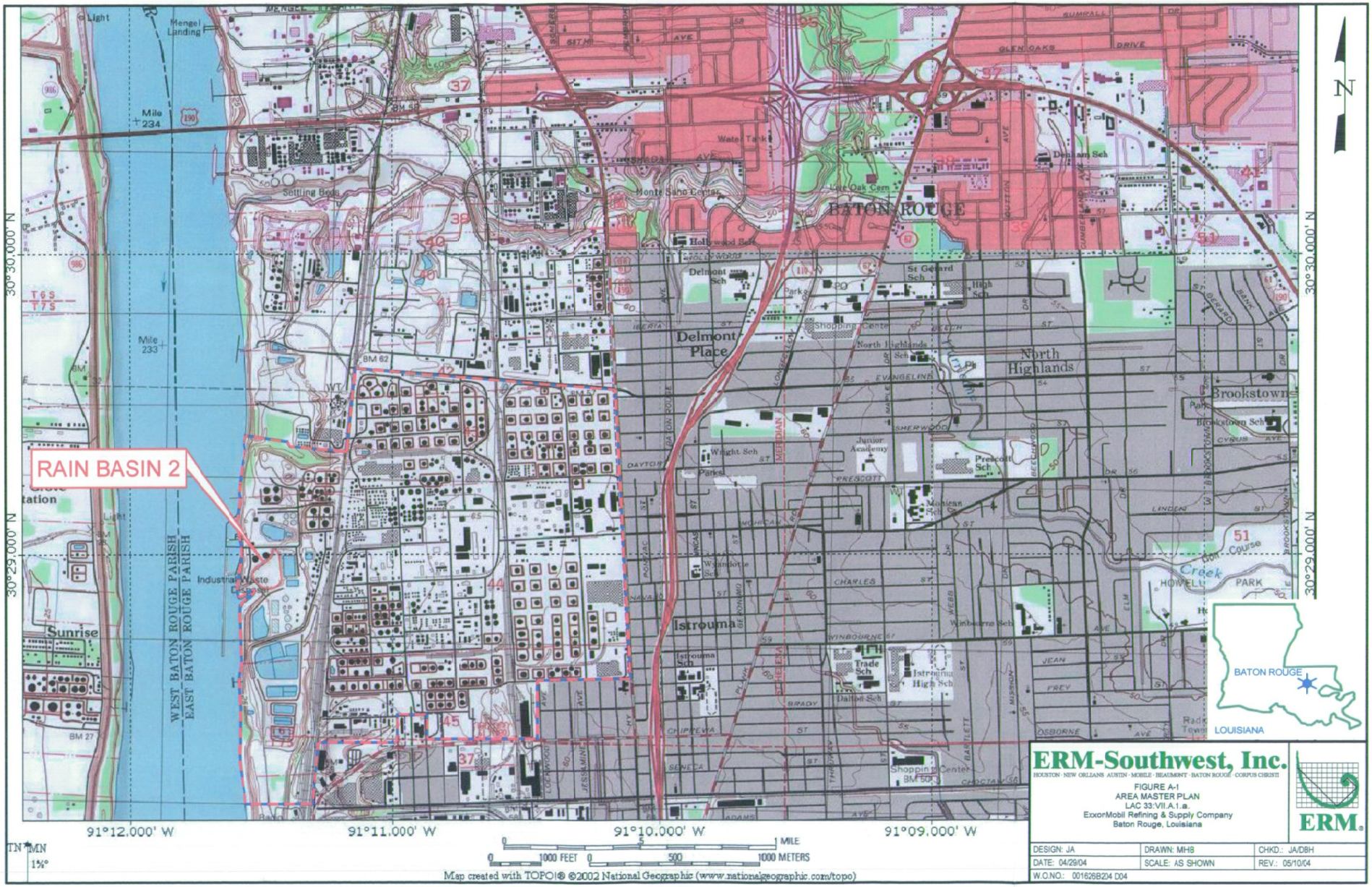
   a. **Area Master Plans – a location map showing the facility, road network, major drainage systems, drainage-flow patterns, location of closest population center(s), location of the public-use airport(s) used by turbojet aircraft or piston-type aircraft, proof of notification of affected airport and Federal Aviation Administration as provided in LAC 33:VII.709.A.2, location of the 100-year flood plain, and other pertinent information. The scale of the maps and drawings must be legible, and engineering drawings are required.**

   The Baton Rouge Refinery of ExxonMobil Refining & Supply Company, a division of ExxonMobil Corporation, is located approximately 232 miles above the Head of Passes of the Mississippi River. The refinery is situated in the industrial complex approximately 2-1/2 miles north of the Interstate 10 Mississippi River Bridge and north of the city of Baton Rouge.

   The USGS topographic map for the West Baton Rouge Quadrangle, provided as Figure A-1, shows the facility, road network, surrounding land use, drainage flow patterns and location of the closest population centers. The refinery is bounded by industrial properties on the north, commercial property on the east, residential and industrial properties on the south and the Mississippi River on the west. The topographic map presents surface contours indicating the drainage flow patterns which are west to the Mississippi River. Additionally, facility stormwater is managed by the facility's sewer system.

   Portions of the USGS topographic map for the West Baton Rouge and the Scotlandville Quadrangles are provided as Figure A-2 showing the location of the closest public-use airport. The public-use airport is Ryan Airport, located approximately four miles to the northeast. A proof of notification of the affected airport is not provided because the facility is not located within 10,000 feet of the airport runways used by turbojet aircraft or within 5,000 feet of airport runways used by piston-type aircraft.

   The location of the 100-year flood plain is provided on Figure A-3. The facility is located within the 100-year flood plain.



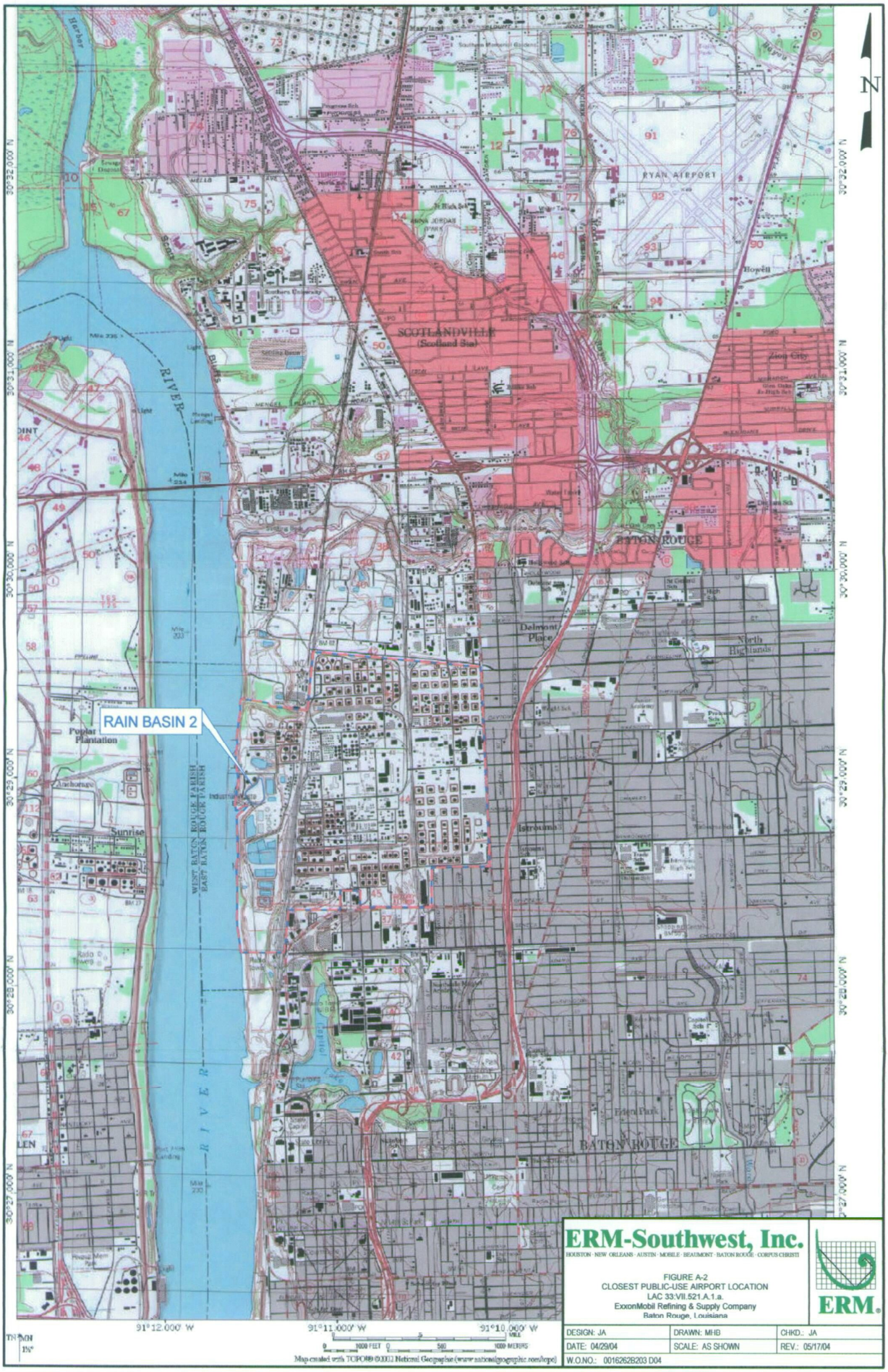
ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · MOBILE · BEAUMONT · BATON ROUGE · CORPUS CHRISTI

FIGURE A-1
AREA MASTER PLAN
LAC 33:VII.A.1.a.
ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

DESIGN: JA	DRAWN: MHB	CHKD.: JA/DBH
DATE: 04/29/04	SCALE: AS SHOWN	REV.: 05/10/04
W.O.NO.: 001626B2/4 D04		

ERM



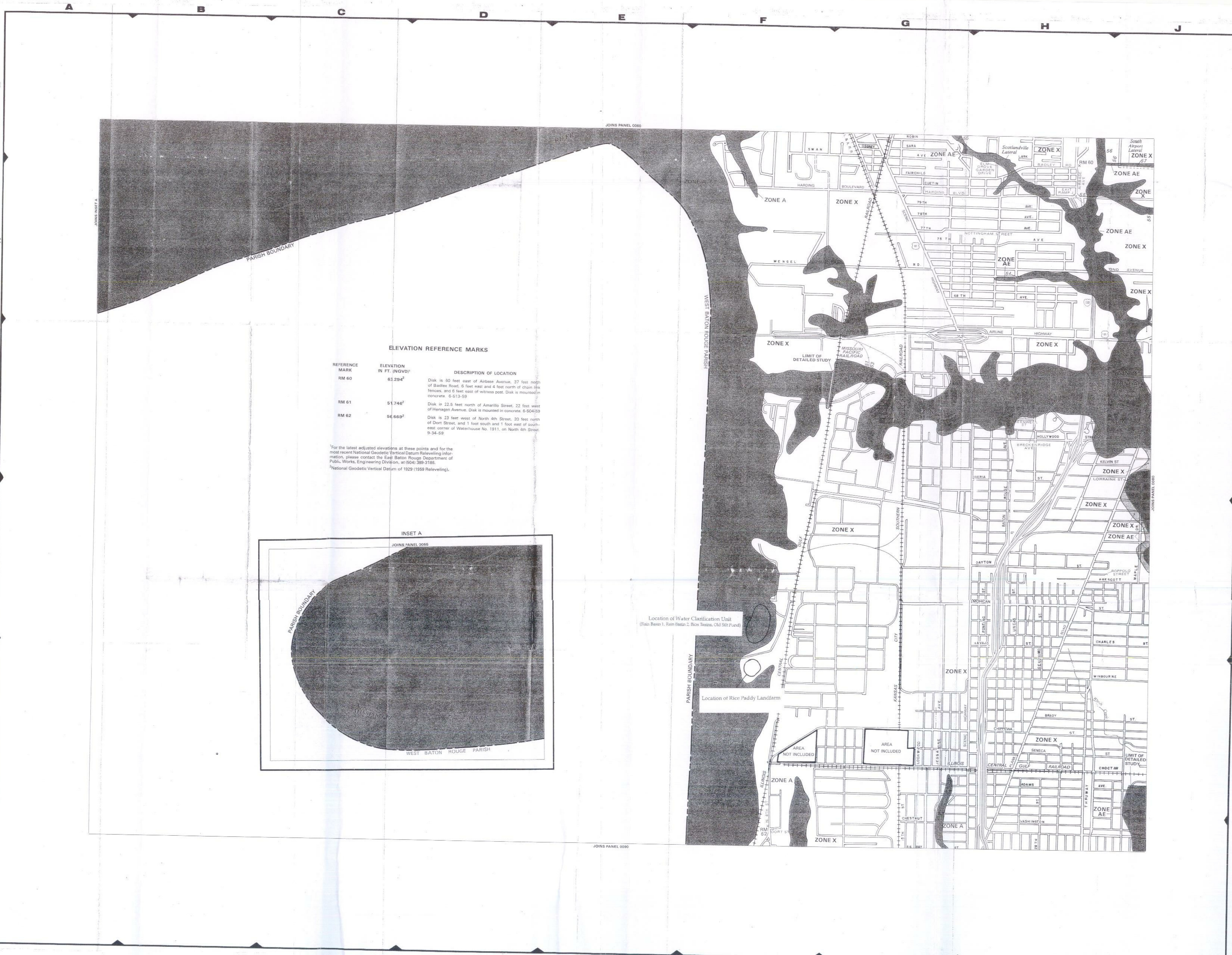
ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · MOBILE · BEAUMONT · BATON ROUGE · CORPUS CHRISTI

FIGURE A-2
CLOSEST PUBLIC-USE AIRPORT LOCATION
LAC 33:VII.521.A.1.a.
ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

ERM

DESIGN: JA	DRAWN: MHB	CHKD.: JA
DATE: 04/29/04	SCALE: AS SHOWN	REV.: 05/17/04
W.O.NO.: 0016262B203.D04		



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 60	63.294[2]	Disk is 60 feet east of Airbase Avenue, 37 feet north of Badlee Road, 6 feet east and 4 feet north of chain link fences, and 6 feet east of witness post. Disk is mounted in concrete. 6-513-59
RM 61	51.746[2]	Disk is 22.5 feet north of Amarillo Street, 22 feet west of Henagen Avenue. Disk is mounted in concrete. 6-504-59
RM 62	56.669[2]	Disk is 23 feet west of North 4th Street, 20 feet north of Dort Street, and 1 foot south and 1 foot east of southeast corner of Waterhouse No. 1911, on North 4th Street. 9-34-59

[1]For the latest adjusted elevations at these points and for the most recent National Geodetic Vertical Datum Releveling information, please contact the East Baton Rouge Department of Public Works, Engineering Division, at (504) 389-3186.

[2]National Geodetic Vertical Datum of 1929 (1959 Releveling).

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A: No base flood elevations determined.
- ZONE AE: Base flood elevations determined.
- ZONE AH: Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99: To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- ZONE V: Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE: Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X: Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X: Areas determined to be outside 500-year floodplain.
- ZONE D: Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D: Cross Section Line

(EL 987): Base Flood Elevation in Feet Where Uniform Within Zone*

RM 7×: Elevation Reference Mark

•M1.5: River Mile

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

For adjoining map panels, see separately printed Map Index.

MAP REPOSITORY
Flood Office Engineering Department, 4th Floor, Municipal Building, North Street, Baton Rouge, Louisiana 70801 (Maps available for reference only, not for distribution).

INITIAL IDENTIFICATION:
NOVEMBER 22, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
JULY 2, 1979

FLOOD INSURANCE RATE MAP REVISIONS:
JULY 6, 1982
NOVEMBER 15, 1985

MAY 17, 1993- to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to update map format, to add roads and road names, to incorporate previously issued letters of map revision, and to incorporate previously issued letters of map amendment.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE
1200 — 0 — 1200 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EAST BATON ROUGE PARISH, LOUISIANA
(BATON ROUGE AND VICINITY)

PANEL 75 OF 125
(SEE MAP INDEX FOR PANELS NOT PRINTED)

PANEL LOCATION

COMMUNITY-PANEL NUMBER
220058 0075 D

MAP REVISED:
MAY 17, 1993

b. **A letter from appropriate agency or agencies regarding those facilities receiving wastes generated off-site, stating that the facility will not have a significant adverse impact on the traffic flow of area roadways and that the construction, maintenance, or proposed upgrading of such roads is adequate to withstand the weight of the vehicles.**

This section is not applicable because the facility does not receive wastes generated off-site.

c. ***Existing Land Use - a description of the total existing land use within three miles of the facility (by approximate percentage) including, but not limited to:***

i. **residential;**

Approximately 53% of the total land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently residential.

ii. **health-care facilities and schools;**

Less than 5% of the total existing land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently devoted to health-care facilities and schools.

iii. **agricultural;**

Less than 5% of the total existing land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently devoted to agricultural use.

iv. **industrial and manufacturing;**

Approximately 10% of the total existing land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently devoted to industrial and manufacturing use.

v. **other commercial;**

Approximately 5% of the total land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently devoted to other commercial activities.

vi. recreational; and

Approximately 11% of the total existing land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently devoted to recreational use. This is largely a result of the Mississippi River being categorized as recreational.

vii. undeveloped.

Approximately 11% of the total existing land use within three miles of the ExxonMobil, Baton Rouge, Solid Waste facility is currently undeveloped land.

Existing land use within a three-mile radius of the site has been estimated based on available maps, published information, and through general knowledge of the area.

d. Aerial Photographs - a current aerial photograph, representative of the current land use, of a one-mile radius surrounding the facility. The aerial photograph shall be of sufficient scale to depict all pertinent features. (The administrative authority may waive the requirement for an aerial photograph for Type III facilities.)

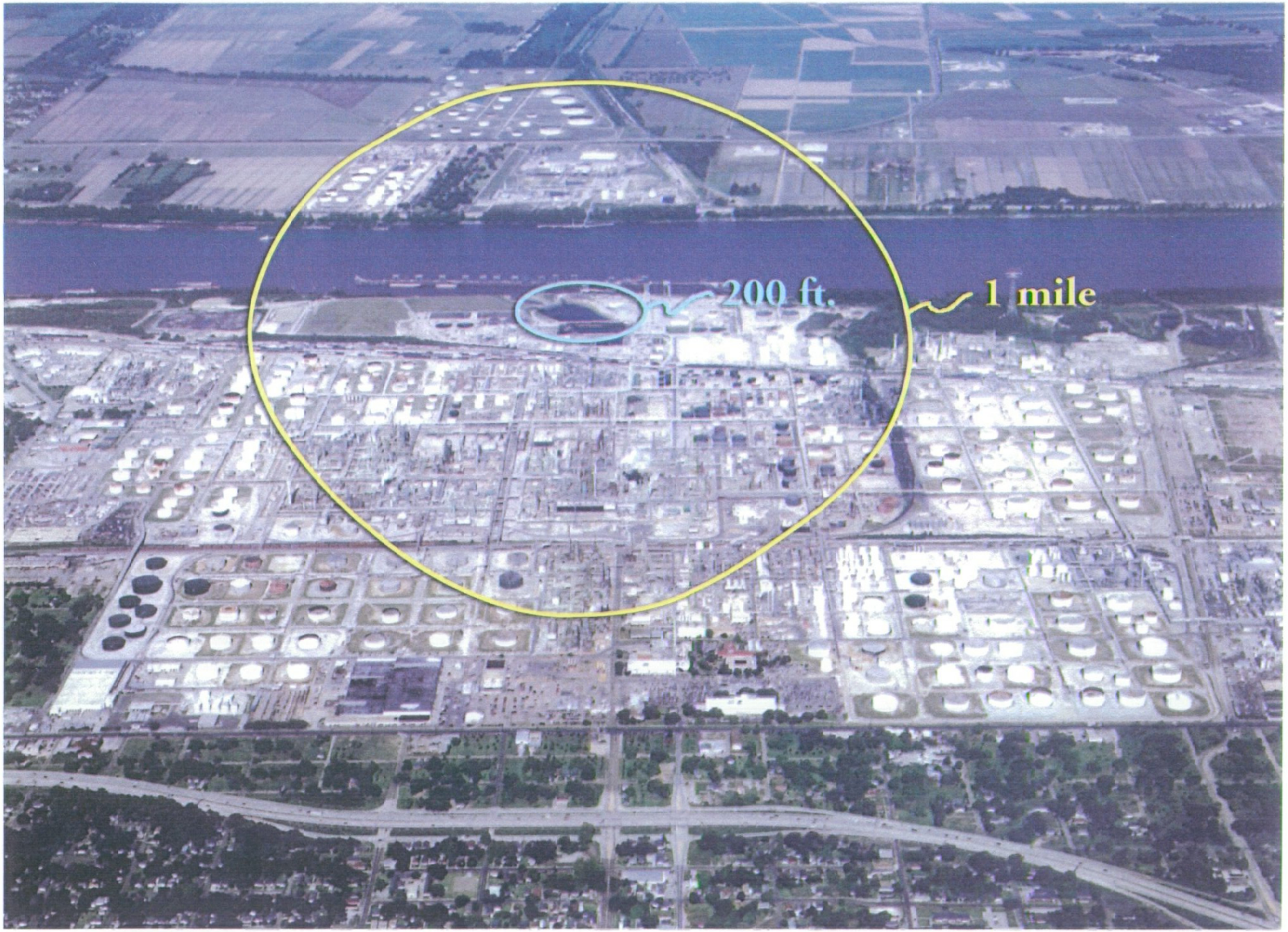
An aerial photograph representing the current land use surrounding the facility is provided as Figure A-4. For clarification, a circle encompassing a one mile radius surrounding the facility was added to the figure.

e. Environmental Characteristics - the following information on environmental characteristics:

i. a list of all known historic sites, recreation areas, archaeologic sites, designated wildlife-management areas, swamps and marshes, wetlands, habitats for endangered species, sensitive ecological areas within 1,000 feet of facility perimeter or as otherwise appropriate;

There are no known historical, archaeological (as registered by the Louisiana Department of Culture, Recreation and Tourism) or recreational areas on or within 1,000 feet of the facility. No designated wildlife areas have been established in the vicinity of the facility, and there is no apparent unique habitat for listed endangered species. No natural swamps or marshes occur within the facility or immediately adjacent to it. The batture area along the Mississippi can be periodically flooded but does not support significant populations of marsh plant species in the refinery vicinity.

The land occupied by the solid waste facility and the refinery have been in use for over 30 years. Because of this, the natural vegetation and topography of the land has been permanently altered. Surrounding properties are occupied by other industrial concerns.



The area 1,000 feet west of the facility includes the Mississippi River (to approximately mid-channel). Industrial complexes have been in operation along the river for many years. The river is not considered to be a unique or sensitive biological habitat.

ii. **documentation from the appropriate state and federal agencies substantiating the historic sites, recreation areas, archaeologic sites, designated wildlife-management areas, wetlands, habitats for endangered species, and other sensitive ecological areas within 1,000 feet of the facility; and**

Not applicable. See LAC 33:VII.521.A.1.e.i. Supporting documentation is located in the Attachments of this section.

iii. **A description of the measures planned to protect the areas listed from the adverse impact of operation at the facility;**

Not applicable. See LAC 33:VII.521.A.1.e.i

f. **A wetlands Demonstration, if applicable, as provided in LAC 33:VII.709.A.4.**

Not applicable for existing facilities

g. **Demographic Information - the estimated population density within a three-mile radius of the facility boundary, based on latest census figures.**

The average population density within a three-mile radius of the ExxonMobil Refinery solid waste facilities is 2,568 persons per square mile. The information is based on data obtained from the Census 2000 Redistricting Data (Public Law 94-171) Summary File.

2. **The following information regarding wells, faults and utilities is required for Type I and II facilities:**

a. **Wells. Map showing the locations of all known or recorded shot holes and seismic lines, private water wells, oil and/or gas wells, operating or abandoned, within the facility and within 2,000 feet of the facility perimeter and the locations of all public water systems, industrial water wells, and irrigations wells within one-mile of the facility. A plan shall be provided to prevent adverse effects on the environment from the wells and shot holes located on the facility.**

Water well data were gathered via the computerized retrieval system employed by the Louisiana Department of Transportation and Development (LDOTD) Water Resources Section in Baton Rouge. Each well identified was plotted, on USGS 7-1/2 minute quadrangle maps. The resulting map is provided as Figure A-5. A listing of registered wells within two miles of the facility is provided as Appendix M.

According to a search of the Louisiana Department of Natural Resources (DNR) files, no oil and/or gas wells or shot holes are located in the vicinity of the impoundment.

Water levels are observed and recorded by the USGS in selected wells, which are assumed to be representative of the aquifer in general. This information is presented in Figure A-6. Hydrographs illustrate the hydraulic connection of the Mississippi River and the Recent Alluvium and the Shallow Pleistocene aquifers.

b. Faults

i. scaled map showing the locations of all recorded faults within the facility and within one mile of the perimeter of the facility; and

No recorded faults lie within one mile of the facility perimeter. Diagrams of seismic activity in Louisiana and the U.S. are presented in Appendix A.

ii. demonstration, if applicable, of alternative fault setback distance as provided in LAC 33:VII.709.A.5.

Not applicable. No recorded faults within 200 feet of the facility perimeter have shown evidence of displacement in Holocene time.

c. Utilities. Scale map showing the location of all pipelines, power lines, and right-of-ways within the site.

The ExxonMobil Refining & Supply Company has been granted an exemption from including these maps in the MMD permit application. These maps provide critical infrastructure information that would be made available to the general public. Access to this information must be limited in the interest of security for the complex. This type of information can cause much more harm in the hands of people with bad intentions than it can help in the permitting process for a rain water surface impoundment that does not rely on any utilities or power for its operation.

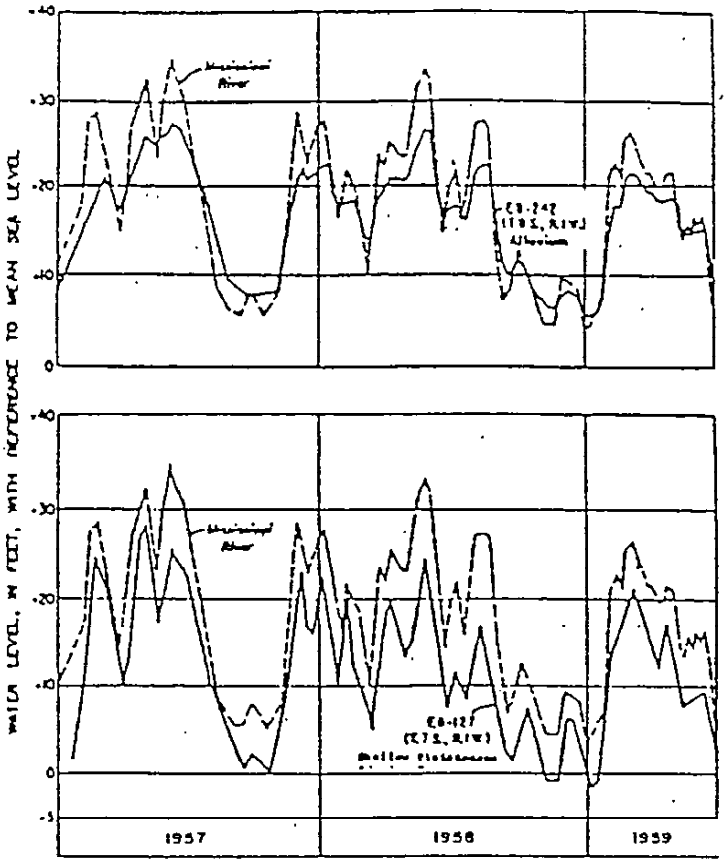
However, this information will be made available for inspection by any government agency upon request. The June 2006 agency approval is included in the LDEQ Permit Acceptance Correspondence in Attachment A to the Introduction.

Map of Water Withdrawal Wells
(1 Mile Radius)

#35 = Active water well (U.S.G.S. number).

*21 = Abandoned water well (USGS #)

The displayed well location may be less accurate/reliable of the Exxon Baton Rouge Refinery records.



(Ref.2)

Hydrographs of water levels in the Mississippi River, Recent and Pleistocene alluvium in the Baton Rouge area.

Supplementary Information-Part II
A-4)a

Sand	Well	1978-79 water levels (feet below land surface)
"Shallow Pleistocene"	EB-127	14.66- 46.46
"800-foot"	EB-128	79.15-102.67
"1,000-foot"	(not measured--comparable to "800-foot")	
"1,200-foot"	WBR-5	97.64-107.67
"1,500-foot"	EB-168	124.37-147.27
"1,700-foot"	(not measured--comparable to "2,000-foot")	
"2,000-foot"	EB-367	326.81-345.34
	EB-90	266.10-280.80
"2,400-foot"	EB-806B	198.22-204.04
"2,800-foot"	EB-944	46.22- 50.80

(Ref.3)

Supplementary Information-Part II
A-4)b)iii

SOURCE: DAMES & MOORE; HYDROGEOLOGICAL STUDIES
HAZARDOUS WASTE MANAGEMENT FACILITIES; FEBRUARY 1980

ERM-Southwest, Inc.
HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • EL PASO

DATE 12/93 | W.O.NO. 14-134

FIGURE A-6
REPRESENATIVE WATER LEVELS
BATON ROUGE AQUIFERS
LAC33:VII.521.A.2.a.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA

Threatened or Endangered Species Correspondence

Attachments

W.O. # 0016262

July 2004

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

ERM-Southwest, Inc.

3501 N. Causeway Blvd.
Suite 200
Metairie, Louisiana 70002-3663
(504) 831-6700
(504) 831-6742 (Fax)

March 17, 1999

Mr. Ron Dunham
Exxon Company, U.S.A.
4045 Scenic Highway
Baton Rouge, Louisiana 70805

ERM.

RE: Threatened or Endangered Species W.O. # 14-334
Mile Marker 232

Ron:

Per your request, Environmental Resources Management (ERM) obtained information relative to the presence of threatened or endangered species within mile marker 232 of the Mississippi River. ERM received documentation from the State of Louisiana Department of Wildlife & Fisheries that there are no rare, threatened, or endangered species or critical habitats within this area. A copy of the letter from the Department of Wildlife & Fisheries is included as Attachment 1 to this correspondence. As you requested, the aforementioned work was performed under Exxon Authorization Number 34.

If you have any questions or comments, please contact me at (504) 831-6700.

Sincerely,

Environmental Resources Management

Barrett A. Cieutat

Barrett A. Cieutat, P.G.

BAC:dsd

Attachment

14-334\Dun_M17.Doc

16300 Katy Freeway
Suite 300
Houston, Texas 77094-1611
(281) 579-8999
(281) 579-8988 (Fax)

7700 Chevy Chase Drive
Suite 110
Austin, TX 78752
(512) 459-4700
(512) 459-4711 (Fax)

3204 Long Prairie Road
Suite C
Flower Mound, TX 75028-2718
(972) 355-2100
(972) 355-7204 (Fax)

2615 Calder, Suite 260
Beaumont, Texas 77702
(409) 833-7755
(409) 727-5454
(409) 833-7799 (Fax)

State of Louisiana

James H. Jenkins, Jr.
Secretary

Department of Wildlife & Fisheries
Post Office Box 98000
Baton Rouge, LA 70898-9000
(225) 765-2800

M.J. "Mike" Foster, Jr.
Governor

March 11, 1999

Mr. Frederick Moreton
ERM-Southwest, Inc.
3501 N. Causeway Blvd., Suite 200
Metairie, LA 70002-3663

RE: Mississippi River Mile Marker 232

Dear Mr. Moreton:

Personnel of the Habitat Section of the Fur and Refuge Division have reviewed the preliminary data for the captioned project. In reviewing our database, no rare, threatened, or endangered species or critical habitats were found within the area of the captioned project that lies in Louisiana. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site within Louisiana's boundaries.

The Louisiana Natural Heritage Program has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. They should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The Louisiana Natural Heritage Program requires that this office be acknowledged in all reports as the source of all data provided here.

Sincerely,

Gary Lester, Coordinator
Natural Heritage Program

GL:rwg
enclosure: Invoice # 99031102

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

December 6, 2004

Ms. Jennifer Arnold
Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816

Dear Ms. Arnold:

Please reference your November 29, 2004, facsimile requesting our review of an existing industrial facility located at 4045 Scenic Highway in Baton Rouge, East Baton Rouge Parish, Louisiana. You requested our review of that facility, including adjoining areas within a 1,000-foot radius of that facility, pursuant to presence of threatened and endangered species and/or other resources of concern. The U.S. Fish and Wildlife Service (Service) has reviewed the information you provided, and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

The project site is located adjacent to the Mississippi River, which is known to be occupied by the pallid sturgeon (*Scaphirhynchus albus*). The pallid sturgeon, Federally listed as an endangered species, is also found in the Atchafalaya Rivers (with known concentrations in the vicinity of the Old River Control Structure Complex) and is possibly found in the Red River as well. The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Detailed habitat requirements of this fish are not known, but it is believed to spawn in Louisiana. Habitat loss through river channelization and dams have adversely affected this species throughout its range. Should the proposed project directly or indirectly affect the pallid sturgeon or its habitat, further consultation with this office will be necessary.

We appreciate the opportunity to provide comments in the planning stages of this proposed project. If you need further assistance, please contact Angela Culpepper (337/291-3137) of this office.

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

cc: LDWF, Natural Heritage Program, Baton Rouge, LA

B. *FACILITY CHARACTERISTICS*

Standards concerning facility characteristics are outlined in LAC 33:VII.709.B (Type I and II facilities), LAC 33.VII.717.B (Type I-A and II-A facilities), and LAC 33:VII.719.B (Type III facilities). A facility plan, including drawings and a narrative, describing the information required below must be provided.

1. **The following information is required for all facilities:**

   a. **elements of the process or disposal system employed, including, as applicable, property lines, original contours (shown at not greater than five-foot intervals), buildings, units of the facility, drainage, ditches and roads;**

   The Baton Rouge Refinery is a thoroughly integrated complex with a maximum crude run capacity of 535,000 barrels per calendar day. Major processes include distillation, catalytic cracking, hydrocracking, reforming, coking, alkylation, polymerization, dewaxing, deasphalting, hydrofining, treating and blending. Approximately 500 petroleum products and grades of products are made ranging from propane to residual fuels, asphalt and coke. Figure B-1 is a simplified flow plan showing the relationship of the units in the overall refining process.

   The refinery includes 30 major process units, loading facilities, docks, river water clarifiers, office buildings, laboratories and extensive tank storage. In addition, ExxonMobil Chemical Company has four process units located within the refinery. Environmental control facilities include a 10,000 gpm wastewater treatment plant, sulfur recovery and tail gas clean-up unit, a benzene stripper, wastewater containment tankage, sour water strippers, marine vapor recovery, and a catalytic cracking regenerator flue gas scrubber.

   Rain Basin 2 is located within the boundaries of the Water Clarification Unit. A plot plan of the refinery showing property lines, buildings, facilities, excavations, drainage, and roads is provided as Figure B-2. Plan and sectional views including contours for the surface impoundment, along with dimensions and other design information, are provided in Appendix B.

   b. **the perimeter barrier and other control measures;**

   A perimeter fence encloses the entire facility as shown in Figure B-3. Docks are manned 24 hours a day, and it is a Dock requirement to stop and question persons who are not identified as refinery or marine personnel. The riverbank north of the Docks is covered with trees and thick natural growth, which make it generally inaccessible from the river.

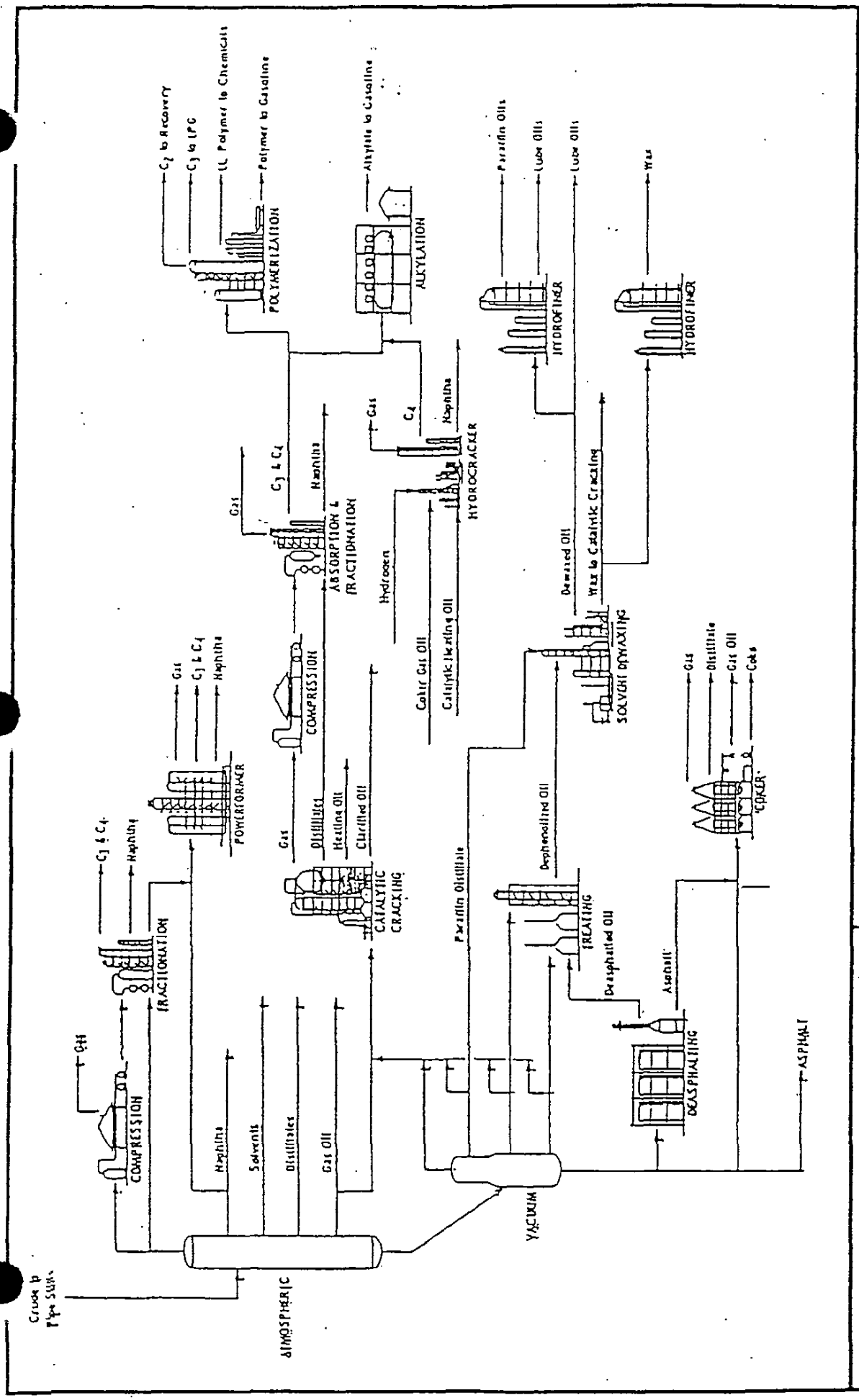


FIGURE B-1
REFINERY FLOW PLAN
LAC33:VII.521.B.1.a.
EXXON COMPANY, U.S.A. REFINERY
BATON ROUGE, LOUISIANA

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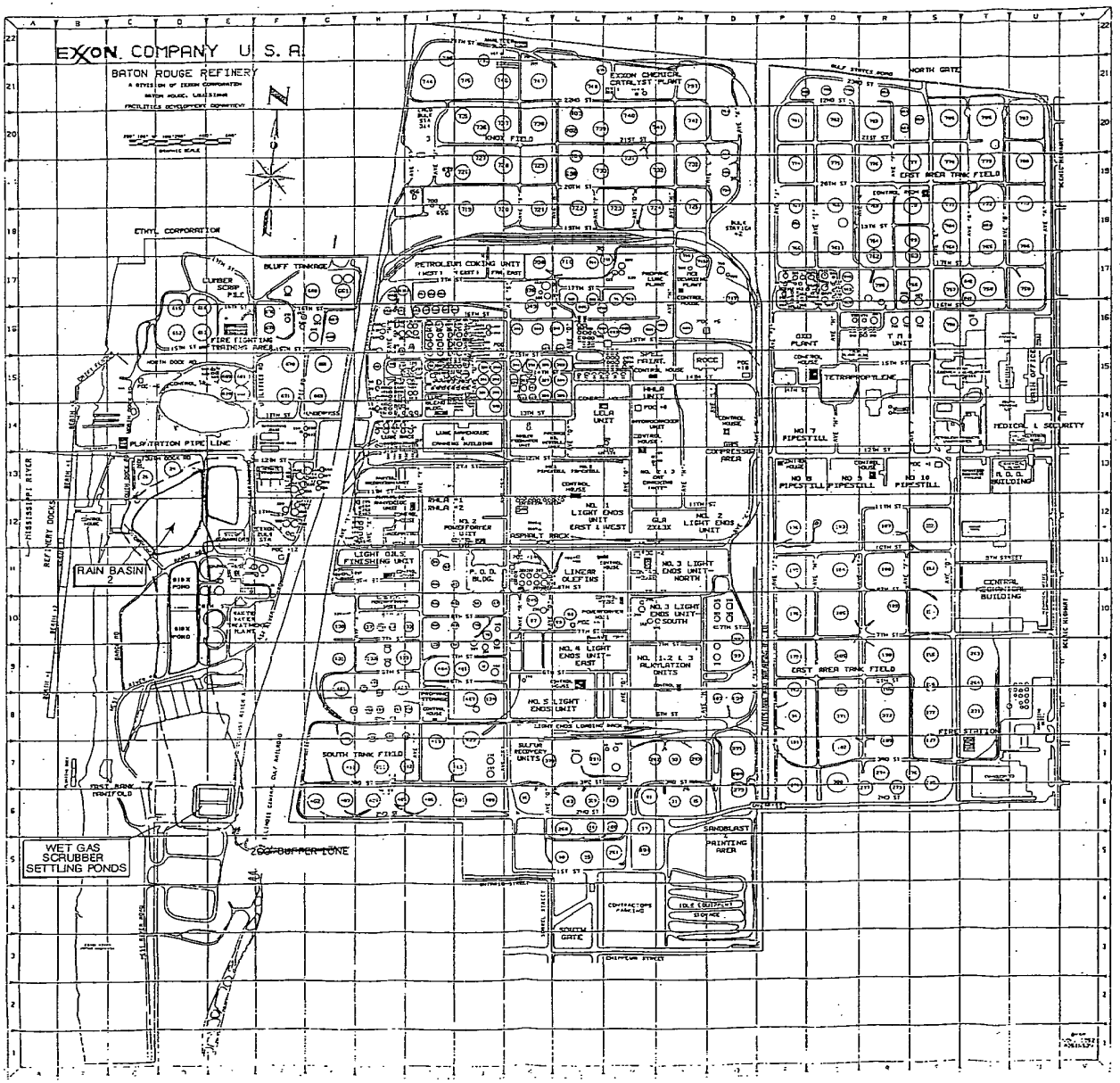
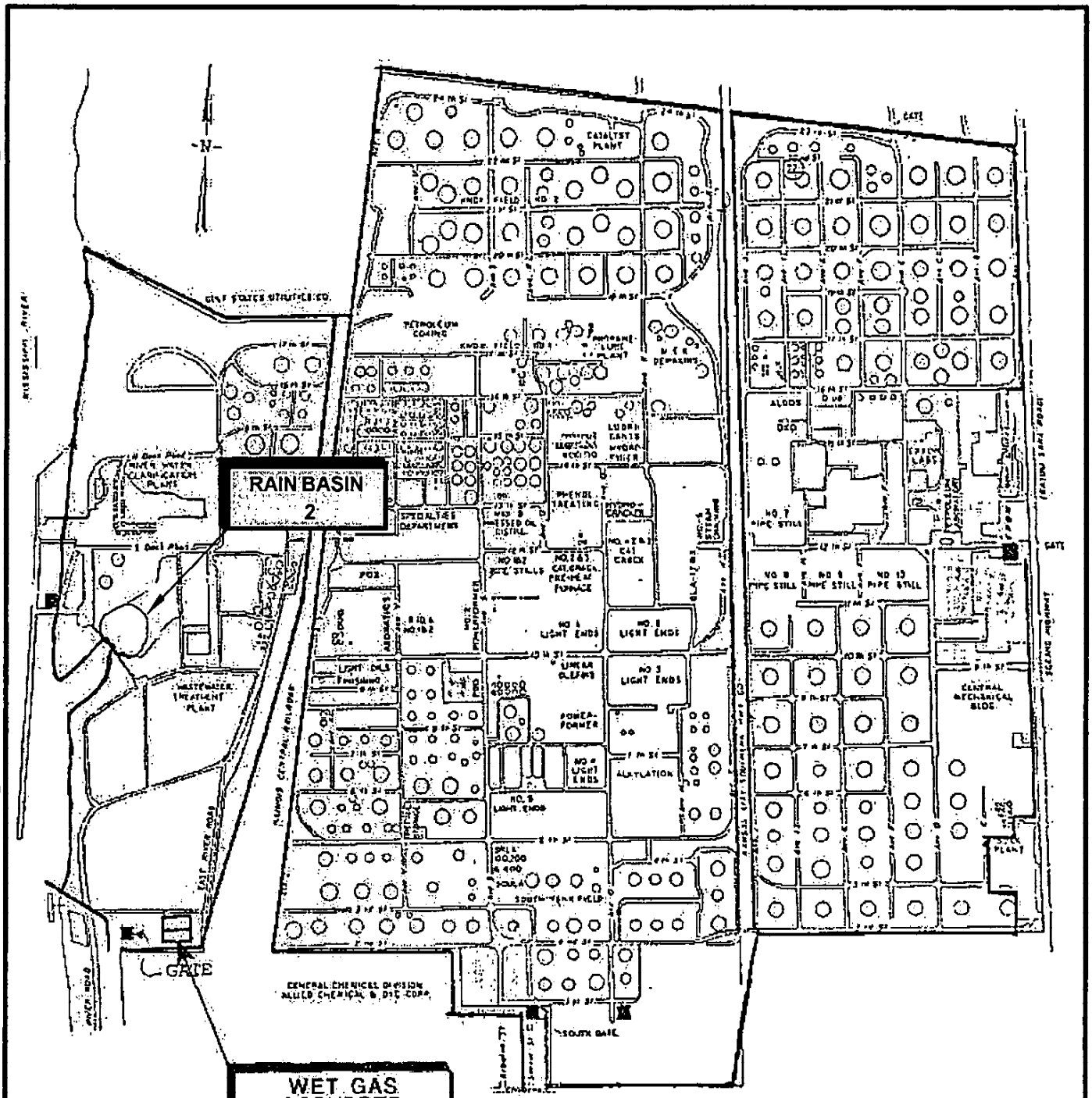
DATE 12/93 | W.O.NO. 14-134



AS	ALKYLATION UNITS
K22	ANALYZER BUILDING
K12	ASPHALT RACK
F17	BLUFF TANKAGE
K14	BOILER FEEDWATER PLANT
T11	CENTRAL MECHANICAL BUILDING
K13	CAT CRACKING UNITS
D7	CAT GAS SCRUBBER POND
M21	CATALYST PLANT
J17	COKER (EAST, WEST, & FAR EAST)
B12	DOCKS
S18	EAST AREA TANK FIELD (NORTH)
D9	EAST AREA TANK FIELD (SOUTH)
B7	EAST BANK MANIFOLD
I20	ENCO BULK STATION 3&4
D18	ESSO ELEC BULK STATION 2
F12	EXXON BULK STATION 2
E16	FIRE FIGHTING TRAINING AREA
T7	FIRE STATION
D14	GAS COMPRESSOR AREA
N12	GLA 2X & 3X
M15	HHLA UNIT
M14	HYDROCRACKING UNIT
K20	KNOX FIELD
S15	LABS (ERADL)
S14	LABS (PPL)
L14	LELA UNIT
L8	LIGHT ENDS LOADING RACK
L12	LIGHT ENDS UNIT #1
M12	LIGHT ENDS UNIT #2
M11	LIGHT ENDS UNIT #3
L9	LIGHT ENDS UNIT #4
L8	LIGHT ENDS UNIT #5
M11	LIGHT OILS FINISHING UNIT
L11	LINEAR OLEFINS
I14	LUBE BLENDING BUILDING
M14	LUBE RACK
I14	LUBE WAREHOUSE & CANNING BUILDING
E17	LUMBER SCRAP PILE
V12	MAIN GATE
D15	MAIN OFFICE
T13	M.O.D. BUILDING
U14	MEDICAL
M17	MEK DEWAXING UNIT
M13	NAPHTHA STRIP
S21	NORTH GATE
P16	OXO PLANT
S13	POC #1
M11	POC #2
L10	POC #4
D16	POC #5
C15	POC #6
J15	POC #7
M14	POC #8
D15	POC #10
F11	POC #12
K11	POC #14
L13	PIPESTILL #1
L13	PIPESTILL #2
P14	PIPESTILL #7
P13	PIPESTILL #8
D13	PIPESTILL #9
R12	PIPESTILL #10
C14	PLANTATION PIPE LINE
J11	POD BUILDING
M10	POWERFORMER #1
J12	POWERFORMER #2
M17	PROPANE LUBE PLANT
I8	PROPANE STORAGE
I12	RHLA
D14	RIVER WATER CLARIFICATION PLANT
M15	RODC
N5	SANDBLAST & PAINTING AREA
U14	SECURITY
L4	SOUTH GATE
M7	SOUTH TANK FIELD
M15	SPEC. MAINTENANCE
K7	SULFUR RECOVERY UNITS
D15	TETRAPROPYLENE UNIT
R16	THA UNIT
E10	WASTE WATER TREATMENT PLANT

FIGURE B-2
EXXON BATON ROUGE REFINERY
PLOT PLAN
LAC33:VII.521.B.1.a.



REVISED DECEMBER 4,1992

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DESIGN: JA	DRAWN: MHB	CHKD.: JA
DATE: 12/93	SCALE: AS SHOWN	REV.: 06/14/04
W.O.NO.: 0016262A205 F04		

FIGURE B-3
BATON ROUGE REFINERY - SECURITY
LAC33:VII.521.B.1.b.

ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

ERM.

The perimeter fence is seven to eight feet tall and is constructed of two-inch diameter chain-link steel posts and woven wire fabric. The top foot of the fence is comprised of three strands of barbed wire or razor wire. Gate entry points are either equipped with secure locking devices or controlled by refinery security personnel on a 24-hour basis. Gate houses are provided for the guards and are equipped with electronically regulated barriers to permit controlled ingress and egress. Floodlighting of the entrances to the facilities is furnished to insure safety and security at night.

c. a buffer zone;

The solid waste facilities are separated from adjacent property by space and natural and artificial barriers as indicated on Figure B-2 Area Master Plan. The 200-foot buffer zone is depicted in Figure A-4. As shown on Figure B-2 roads circumscribe the waste management area. Rain Basin 2 is not within 200 feet of adjacent land owners. Additionally, the natural and artificial barriers that constitute the buffer zone do not store, process, or dispose of solid waste during normal operations. Incidental staging prior to transport occurs following occasional maintenance and cleaning of waste water treatment equipment and the rainwater basins.

d. fire-protection measures;

The fire protection capabilities at the ExxonMobil Baton Rouge Refinery consist of the Primary Emergency Team, Volunteer Fire Squad and fire fighting equipment and supplies. A description of the fire water system, mobile equipment and foam system is provided in Appendix C. The location of the Refinery Fire Station and access routes to the solid waste facilities are shown in Figure B-4.

e. landscaping and other beautification efforts;

Not applicable. The facility is within the boundaries of an industrial plant.

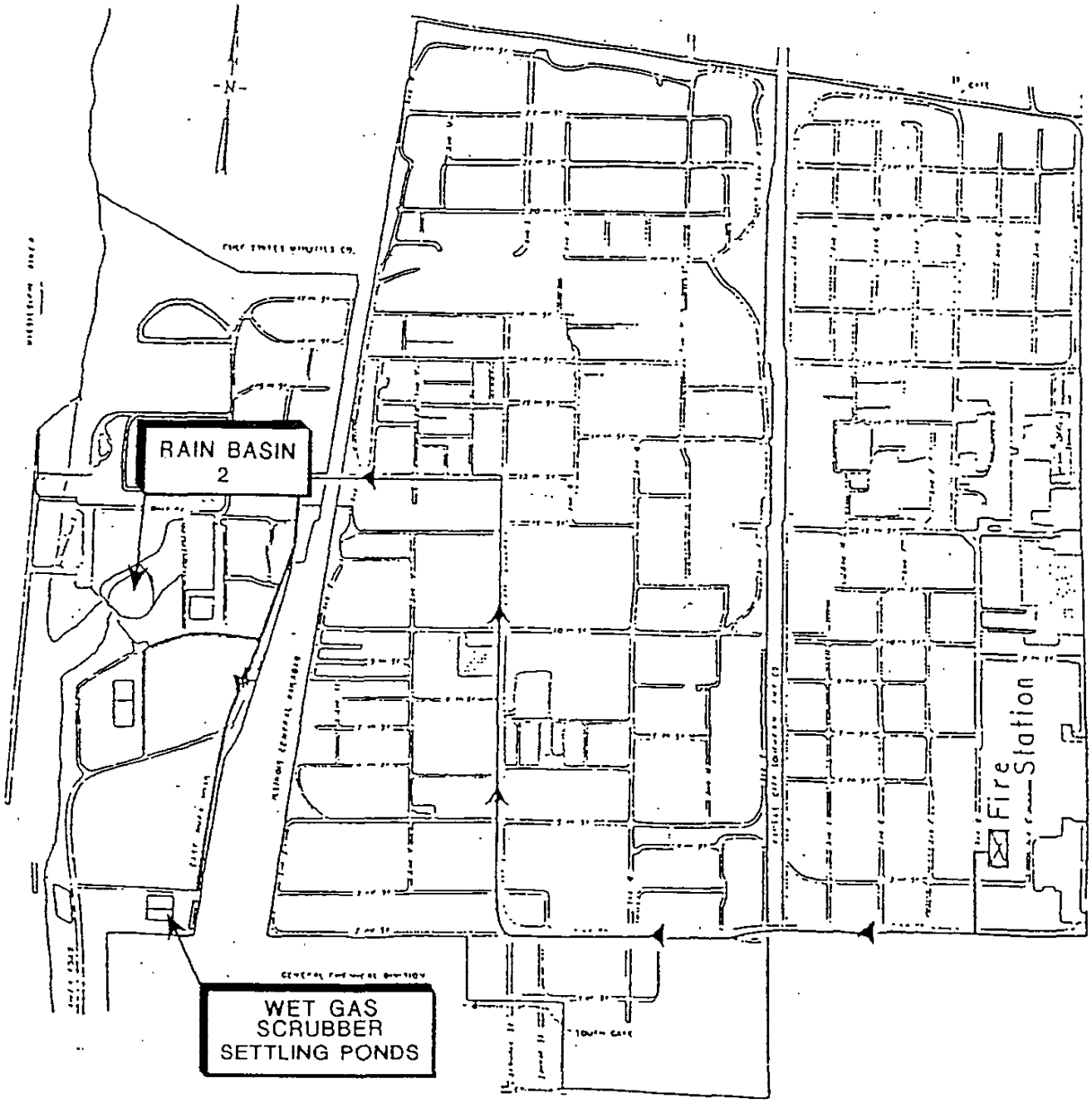
f. devices or methods to determine, record, and monitor incoming waste;

The ExxonMobil Baton Rouge Refinery does not accept any waste from outside the plant. All waste disposed at the site are generated at the refinery. These wastes consist of the wastewater and solids, which settle out of the wastewater in the surface impoundments. Refer to the Facilities Operation Plan (Appendix A) for additional information.

g. NPDES discharge points (existing and proposed); and

Figure B-5 is a schematic diagram of the wastewater treatment system at the Baton Rouge Refinery. There are currently three outfalls permitted under NPDES Permit No. LA 0005584. Process waters and contaminated storm water that have been treated in the wastewater treatment system are discharged to the Mississippi River through Outfall 001.

Outfall 002 is the discharge point for clarified river water, and uncontaminated storm water is discharged through Outfall 003.



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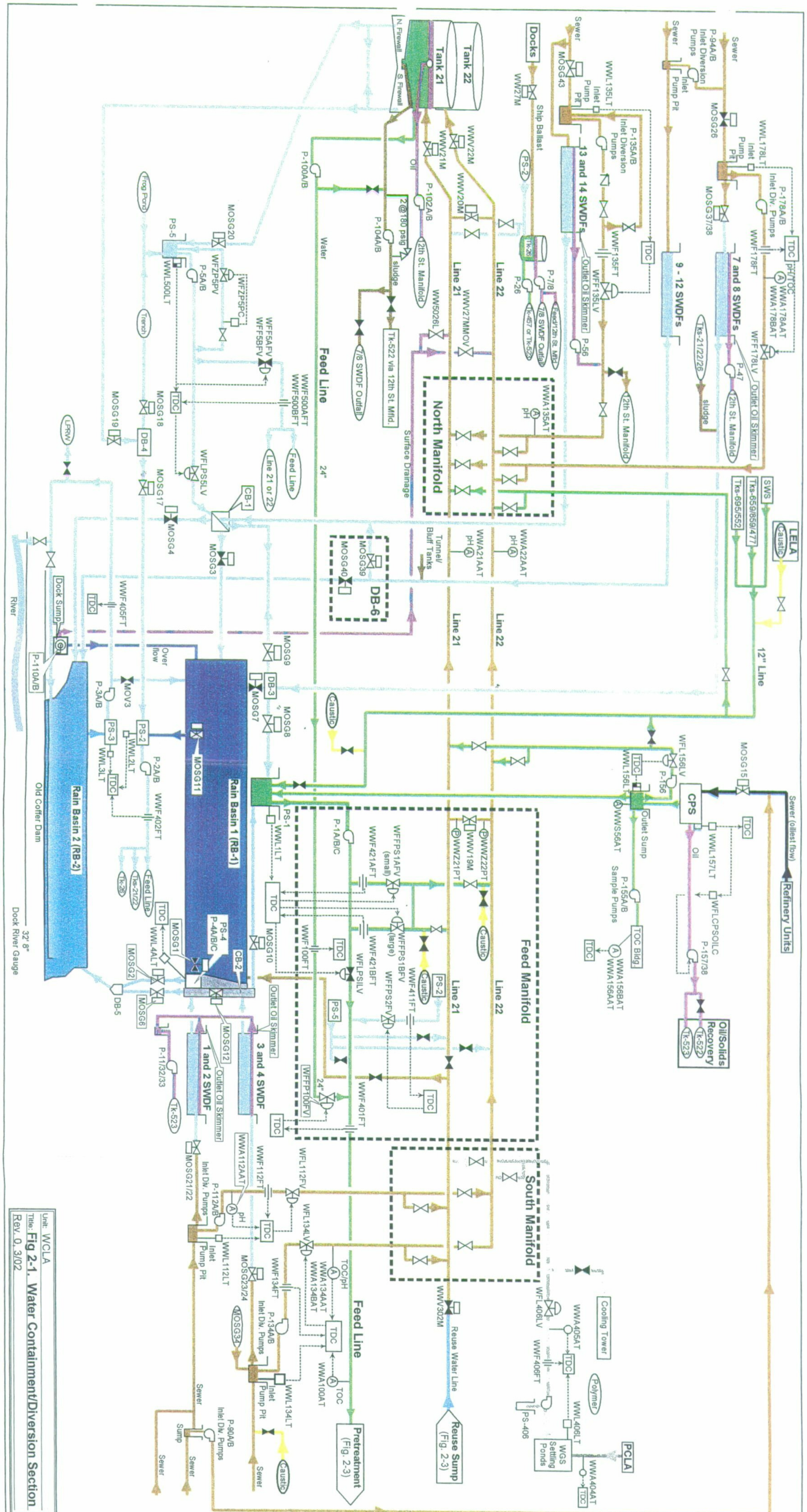
W.O.NO. 14-134

FIGURE B-4

LOCATION OF REFINERY
FIRE STATION AND ACCESS ROUTES
LAC33:VII.521.B.1.d.

EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA


Tank 22
Tank 21
Docks
Sewer
13 and 14 SWDFs
9 - 12 SWDFs
7 and 8 SWDFs
North Manifold
Feed Line
Line 21
Line 22
12" Line
LELA
Caustic
SWS
DB-6
Rain Basin 1 (RB-1)
Rain Basin 2 (RB-2)
Old Coffer Dam
River
Dock Sump
CPS
Outlet Sump
Refinery Units
Oil/Solids Recovery
Feed Manifold
South Manifold
3 and 4 SWDF
1 and 2 SWDF
Cooling Tower
Polymer
PCLA
WGS Settling Ponds
Reuse Sump (Fig. 2-3)
Pretreatment (Fig. 2-3)
Reuse Water Line
Unit: WCLA
Title: Fig 2-1. Water Containment/Diversion Section
Rev. 0, 3/02

PERMIT NUMBER
LA0005584

OFFICE OF ENVIRONMENTAL SERVICES

Water Discharge Permit

Pursuant to the Clean Water Act, as amended (33 U.S.C. 1251 et seq.), and the Louisiana Environmental Quality Act, as amended (La. R. S. 30:2001 et seq.), rules and regulations effective or promulgated under the authority of said Acts, and in reliance on statements and representations heretofore made in the application, a Louisiana Pollutant Discharge Elimination System permit is issued authorizing

ExxonMobil Refining and Supply Co.
Baton Rouge Refinery
Post Office Box 551
Baton Rouge, LA 70821-0551

Type Facility: petroleum refinery

Location: 4045 Scenic Highway, Baton Rouge
East Baton Rouge Parish

Receiving Waters: Mississippi River

to discharge in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, and III attached hereto.

This permit shall become effective on December 1, 2001

This permit and the authorization to discharge shall expire five (5) years from the effective date of the permit.

Issued on November 7, 2001

Bliss M. Higgins

Bliss M. Higgins
Assistant Secretary

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 001, treated process wastewater, process and nonprocess area stormwater, utility wastewater, sanitary wastewater, and miscellaneous wastewaters (estimated flow is 15 MGD).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations (lbs/day, UNLESS STATED)		Other Units (mg/L, UNLESS STATED)		Monitoring Requirements	
CONVENTIONAL	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	82581	---	---	0(*1)	---	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	82582	---	---	446(*1)	---	Continuous	Recorder
pH Minimum/Maximum Values (Standard Units)	00400	---	---	Report (Min)	Report (Max)	Continuous	Recorder
BOD_5	00310	3890	5925	---	---	1/day	24-hr. Composite
TSS	00530	4954	8330	---	---	3/week	24-hr. Composite
Oil & Grease	03582	1841	3356	---	---	1/week	Grab
COD	00340	31965	49006	---	---	3/week	24-hr. Composite
Ammonia (as N)	00610	1658	3053	---	---	1/week	24-hr. Composite
Sulfide (as S)	00745	29	56	---	---	1/quarter	Grab
Phenolic Compounds(*2)	32730	22	41	---	---	1/week	Grab
METALS(*2)							
Total Chromium	01034	27	43	---	---	1/6 months	24-hr. Composite
Chromium (6+)	01032	5.6	12.5	---	---	1/6 months	24-hr. Composite

WHOLE EFFLUENT (ACUTE) TOXICITY TESTING	STORET Code			(Percent %, UNLESS STATED) Monthly Avg Minimum	48-Hour Minimum	Measurement Frequency	Sample Type
NOEC, Pass/Fail [0/1], Lethality, Static Renewal, 48-Hour Acute, Pimephales promelas	TEM6C	---	---	Report	Report	1/year	24-hr. Composite
NOEC, Value [%], Lethality, Static Renewal, 48-Hour Acute, Pimephales promelas	TOM6C	---	---	Report	Report	1/year	24-hr. Composite

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Outfall 001 continued)

Effluent Characteristic		Discharge Limitations		Monitoring Requirements		
			Other units (Percent %, UNLESS STATED)			
WHOLE EFFLUENT (ACUTE) TOXICITY TESTING	STORET Code		Monthly Avg Minimum	48-Hour Minimum	Measurement Frequency	Sample Type
NOEC, Value [%], Coeffecient of Variation, Static Renewal, 48-Hour Acute, Pimephales promelas	TQM6C	--- ---	Report	Report	1/year	24-hr. Composite
NOEC, Pass/Fail [0/1], Lethality, Static Renewal, 48-Hour Acute, Daphnia pulex	TEM3D	--- ---	Report	Report	1/year	24-hr. Composite
NOEC, Value [%], Lethality, Static Renewal, 48-Hour Acute, Daphnia pulex	TQM3D	--- ---	Report	Report	1/year	24-hr. Composite
NOEC, Value [%], Coeffecient of Variation, Static Renewal, 48-Hour Acute, Daphnia pulex	TQM3D	--- ---	Report	Report	1/year	24-hr. Composite

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001, at the point of discharge from the wastewater treatment system prior to combining with other waters.

FOOTNOTE(S):

(*1) The pH shall be within the range of 6.0 - 9.0 standard units at all times subject to the continuous monitoring pH range excursion provisions at Part II.I.

(*2) See Part II.J.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 002, the continuous discharge to the Mississippi River of clarifier underflow (estimated flow is 0.8 MGD).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations				Monitoring Requirements	
		(lbs/day, UNLESS STATED)		Other Units (mg/L, UNLESS STATED)			
	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency (*1)	Sample Type
Flow-MGD	50050	Report	Report	---	---	Continuous	Recorder

COAGULANTS:

The quantity and types of all coagulants (clarifying agents) used in the intake raw river water treatment clarification system during the sampling month shall be recorded. Records of the quantity and type of coagulants used shall be retained for three (3) years following Part III.C.3. No DMR reporting shall be required.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 002, at the point of discharge of the clarifier prior to combining with other waters.

FOOTNOTE(S):

(*1) When discharging.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

During the period beginning the effective date and lasting through the expiration date the permittee is authorized to discharge from:

Outfall 003, Process and nonprocess area stormwater (after a first flush of up to approximately one inch of rainfall) and miscellaneous industrial and utility wastestreams.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic		Discharge Limitations				Monitoring Requirements	
		(lbs/day, UNLESS STATED)		Other Units (mg/L, UNLESS STATED)			
	STORET Code	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency(*1)	Sample Type
Flow-MGD	50050	Report	Report	---	---	1/day	Estimate
TOC	00680	---	---	---	50	1/day	Grab
Oil and Grease	03582	---	---	---	15	1/day	Grab
pH Minimum/Maximum Values (Standard Units)	00400	---	---	6.0 (*2) (Min)	9.0 (*2) (Max)	1/day	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no visible sheen or stains attributable to this discharge in the drainage area downstream from the permitted outfall. The drainage area downstream is defined as the area in the outfall canal located downstream of any control device, prior to entering the main channel of the Mississippi River. . .

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 003:

1. During period of overflow from Rain Basin No. 2, samples shall be collected immediately below the point of overflow from the weir via dip sample.

2. During periods when the wastewater in Rain Basin No. 2 is being pumped out to the receiving stream, samples shall be collected at pump station P-3 located on Coffer Dam Drive which separates Rain Basin No. 1 from Rain Basin No. 2.

FOOTNOTE(S):

(*1) When discharging.

(*2) The permittee shall report on the Discharge Monitoring Reports both the minimum and maximum instantaneous pH values measured.

ExxonMobil Refining & Supply Company
P. O. Box 551
Baton Rouge, LA 70821-0551

S. J. Vanderleeuw
Refinery Manager
Baton Rouge Refinery

ExxonMobil
Refining & Supply

July 26, 2006

Louisiana Department of Environmental Quality
Office of Environmental Services
602 N. Fifth Street
Baton Rouge, La 70802
Attn: Dr. Chuck Carr Brown, Assistant Secretary

RE: LPDES Permit LA0005584
Agency Interest No. 2638
ExxonMobil Refining and Supply Company
Baton Rouge Refinery

Dear Dr. Brown:

The ExxonMobil Refining and Supply Company (ExxonMobil) Baton Rouge Refinery herewith submits an application for renewal of Louisiana Pollutant Discharge Elimination System (LPDES) Permit No. LA0005584 to the Louisiana Department of Environmental Quality (LDEQ) for the Baton Rouge Refinery located in Baton Rouge, Louisiana. One original and three copies of the application are being submitted.

If you have any questions, please feel free to contact Irving Sanders at (225) 977-4995.

Very Truly Yours,

Stan Vanderleuuw
Refinery Manager

EXXONMOBIL REFINING AND SUPPLY COMPANY
BATON ROUGE REFINERY
BATON ROUGE, LOUISIANA

APPLICATION FOR RENEWAL OF LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT NO. LA0005584
AI NO. 2638

JULY 2006

PREPARED BY:

C-K ASSOCIATES, LLC
17170 PERKINS ROAD
BATON ROUGE, LOUISIANA 70810
(225) 755-1000

C-K ASSOCIATES' PROJECT NO. 2281W

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1.0 INTRODUCTION

1.1 Background

The ExxonMobil Refining and Supply Company (ExxonMobil) Baton Rouge Refinery owns and operates a petroleum refinery located in Baton Rouge, Louisiana. ExxonMobil is currently operating under Louisiana Pollutant Discharge Elimination System (LPDES) Permit No. LA0005584 issued by the Louisiana Department of Environmental Quality (DEQ) on November 7, 2001 with an effective date of December 1, 2001. Table 1 is a list of environmental permits that the Baton Rouge Refinery operates under.

The following information and U.S. Environmental Protection Agency (EPA) Application Form 1 (General Information), Form 2C (Wastewater Discharge Information), Form 2F (Storm Water Discharges Associated with Industrial Activity), and Section IV of the DEQ Application Form SCC-2 including responses to the Environmental Impact Questionnaire are being submitted in accordance with the requirements of Louisiana Administrative Code (LAC) at LAC 33:IX.2501, 2503, and 2511 in Appendices A, B, C, and D, respectively. In addition, an addendum to permit applications is also being submitted in accordance with LAC.33:I.1701 (Appendix E).

1.2 Site Location

The Baton Rouge Refinery is located at 4045 Scenic Highway in Baton Rouge, East Baton Rouge, Louisiana. The refinery is situated on approximately 1,100 acres. The geographical coordinates of the front gate are latitude 30° 29' 03" and longitude 91° 10' 08". ExxonMobil's Federal Tax Identification number is 13-5409005.

Figure 1 is a Site Location Map depicting the site location and property boundaries. Also shown are the outfalls and active water wells within a two-mile radius of the refinery that are registered with the Louisiana Department of Transportation and Development (DOTD). Table 2 contains a list of these wells. Abandoned wells, destroyed wells, plugged wells, monitor wells, test holes, piezometers, observation wells, and recovery wells are not included.

1.3 Process Description

The Baton Rouge Refinery is an integrated petroleum refinery involved in the production of refined petroleum products and petroleum feedstocks [Standard Industrial Classification (SIC) Code 2911]. The refinery processes approximately 520,000 barrels of crude oil per day (bbls/day) and is considered a maximum conversion refinery which means that almost all of the molecules in the crude entering the refinery are converted to match output with current market demand.

Table 3 is a summary of production rates from 2003 through 2005.

Major processes include distillation, catalytic cracking, hydrocracking, reforming, coking, alkylation, polymerization, dewaxing, deasphalting, hydrofining, hydrotreating, treating, and blending. Approximately five hundred petroleum products and grades of products are made, ranging from propane to residual fuels, asphalt, and coke. Facilities include more than thirty major process units, tankage, loading facilities, docks, river water clarifiers, office buildings, and laboratories. The Baton Rouge Refinery is equipped with docks which allow crude oil and products to be transported to and from the refinery by ship and/or barge. Figure 2 is a Site Master Plan which identifies process units and storage tanks.

2.0 SUMMARY OF WASTEWATER DISCHARGES

2.1 Water Source

Make-up water for the refinery is obtained from the Mississippi River which is clarified and from on-site water wells. Potable water is obtained from on-site water wells.

2.2 Description of Outfalls

The Baton Rouge Refinery is currently authorized to discharge wastewaters from three outfalls (001, 002, and 003) under LPDES Permit No. LA0005584 and from three storm water outfalls (004, 005, and 006) under the LPDES Multi-sector General Permit LAR050000. Figure 3 is a Water/Wastewater Flow Balance Diagram which contains the estimated wastewater flow rates from each outfall and the contributing sources.

- Outfall 001 consists of treated process wastewater, process and nonprocess storm water, utility wastewater, sanitary wastewater, and miscellaneous wastewaters. Table 4 is a list of wastewater streams potentially present. This list includes streams not specifically identified above, but nonetheless are intended to be covered under the "process wastewater" or "utility wastewater" categories. Outfall 001 discharges to the Mississippi River in Segment No, 070301 of the Mississippi River Water Quality Management Basin.

- Outfall 002 consists of clarifier underflow. Outfall 002 discharges to the Mississippi River.

- Outfall 003 consists of contaminated and non-contaminated storm water (after first flush of up to approximately one inch of rainfall) and miscellaneous industrial and utility wastestreams. Table 5 is a list of wastewater streams potentially present. This list includes streams not specifically identified above;

but nonetheless are intended to be covered under these categories. It is discharged to Callahan Bayou and then to the Mississippi River.

Additional portions of the property discharge storm water associated with industrial activity (including steam condensate from the docks) via sheet flow or discharge storm water that is not associated with industrial activity.

2.3 Wastewater Treatment Systems

The Baton Rouge Refinery operates a complex system of underground and aboveground wastewater and storm water collection sewers. Treatment is accomplished in a system of units collectively known as Water Clarification of Louisiana (WCLA).

Under normal rainfall conditions, storm water runoff is routed to Equalization Tanks 21 or 22 and then through the downstream wastewater treatment systems and Outfall 001 to the Mississippi River. During periods of high intensity and/or extended duration rainfall, the storm water is then routed to Rain Basin #1 (24-million gallon capacity) prior to treatment and discharge via Outfall 001. Additionally, if the storm water intensity is such that Rain Basin #1 reaches its working capacity, all subsequent storm water flows are then routed to Rain Basin #2 (15-million gallon capacity). When Rain Basin #2 reaches capacity, storm water discharge will occur at the Outfall 003 weir.

Figure 4 is a Site Master Plan Showing Sewer Systems. The following is a description of each storm water sewer system (drainage area).

SWDF 1/2 Sewer System

The 1/2 sewer system receives storm water runoff from the southern portion of the site which includes the Alkylation Unit, No. 2 Light End Unit - South, No. 4 Light Ends Unit - East and West, No. 5 Light Ends Unit, Sulfur Recovery Units, South Tank Field, East Tank Field, Water Clarification Unit, Central Mechanical Building, Quality Assurance Lab, and ExxonMobil Process Research Lab.

SWDF 3/4 Sewer System

The 3/4 sewer system receives storm water runoff from the central portion of the site which includes the No. 7, 8, 9 and 10 Pipestill, No. 3 Light Ends Unit - North, No. 2 Light Ends Units, GLA, Linear Olefins, Light Oils Finishing Unit, HHLA East, and the Coker Unit.

SWDF 7/8 Sewer System

The 7/8 sewer system receives storm water runoff from the central portion of the site which includes the No. 1 and 2 Pipestill, No. 2 and 3 Cat Cracking Units, Hydrocracker Unit, HHLA Unit, Aromatics, LELA Unit, Wax Hydrofiners and West Complex.

SWDF 9-12 Sewer System

The 9-12 sewer system receives a limited amount of storm water runoff from the central portion of the site, which includes the LELA Unit, Boiler Feedwater Unit, and Packaging and Shipping Building.

SWDF 13/14 Sewer System

The 13/14 sewer system receives storm water runoff from the northern portion of the site, which includes Knox Field, Bluff Tankage, and East Tank Field.

Oily Process Wastewater/Storm Water Sewer System

The oily process wastewater/storm water sewer system (formerly named the CPS system) receives oily process wastewater from throughout the refinery and a limited amount of storm water. Wastewater is then routed to Tanks 21 and 22 and then on to the wastewater treatment system for oil/water separation.

The wastewater treatment system consists of several consecutive sections employing different treatment technologies including: (1) hydrocarbon stripping; (2) oil/water separation; (3) gravity separation; (4) equalization; (5) neutralization; (6) aggressive biological treatment (ABT); (7) flash mix and flocculation; (8) ABT clarification with dissolved air flotation process; (9) cooling; (10) activated sludge biological treatment (Biox Unit); (11) and clarification. Anti-foaming agents and coagulants are added to the clarifier on an as needed basis to remove suspended solids, prevent foam from resulting in the final effluent, and improve water quality.

2.4 Wastewater-related Information

Significant materials used at the Baton Rouge Refinery are stored and handled in such a manner to minimize impact to storm water. Bulk storage tanks are designed and maintained in accordance with ExxonMobil's Spill Prevention, Control, and Countermeasure (SPCC) Plan. Table 6 lists significant materials that are stored on-site. Table 7 lists water treatment chemicals that are used on-site. Figures 2, 4, and 5 show existing structural controls (*i.e.*, berms, dikes, sewer systems), locations where significant materials are stored, <90-day

hazardous waste storage areas, loading/unloading areas, and impervious areas including paved areas and buildings which account for approximately 43% of the surface area.

Structural controls used to minimize the potential for storm water contamination include containment dikes/berms around significant materials handling areas and storage areas. Sloping and grading of pads and roads is used to direct storm water to drains or drainage ditches. The Baton Rouge Refinery employs numerous operational practices to avoid and/or contain any potential leaks or spills. If any materials are spilled or released during loading/unloading operations, the materials are contained and routed to the WCLA unit.

Hazardous wastes generated at the Baton Rouge Refinery are temporarily stored in <90-day hazardous waste storage areas and in the Central Management Waste facility prior to offsite disposal at a permitted disposal facility. The Baton Rouge Refinery has no hazardous waste treatment or disposal units.

The Baton Rouge Refinery developed a Sewer Alert Program. Whenever it appears that rainfall is going to occur, the facility discontinues the discharge of small volume dry weather process flows to the predominately storm water sewer systems so that it can handle more storm water flows. Also, the Baton Rouge Refinery developed a Sewer Tracking Oil Prevention (STOP) Program. This involves the periodic inspection of sewer seal boxes for the presence of oil. If oil is found, a vacuum truck is notified to remove the oil from the seal box.

Commercially-approved herbicides are applied by a contractor around buildings, fences, and railyards on an as-needed basis to control weeds and vegetation. Pesticides are applied for insect and rodent control throughout the year. Fertilizers are applied to landscaping on an as-needed basis. Table 8 lists the pesticides and herbicides currently used on-site.

Table 9 is a summary of biomonitoring results.

Table 10 is a list of spills to the ground or surface water during the last three years.

3.0 FACILITY CHANGES

There were only two significant facility changes since the last permit application was submitted in 2000.

1. One was the construction and operation of the Low Sulfur Motor Gasoline unit which began startup in 2003. Wastewater from this unit undergoes wastewater treatment and will not affect the effluent quality of wastewater discharges.
2. Functionality change to the oily process wastewater sewer system (formerly known as the Corrugated Plate Sewer System). Since the last LPDES permit

application the Corrugated Plate Separator (an incline plate type separator) has been removed from service. The functionality of the inclined plate separator is now being accomplished within existing Tank 21 and/or Tank 22 whereas, both of the tanks are NESHAPS regulated and each has separate individual oil and solids removal facilities. Oil and water separation is achieved in Tanks 21&22 because each operate with a minimum hydraulic residence time of 4.5 hours.

4.0 SAMPLING AND ANALYSIS CONSIDERATIONS

The Baton Rouge Refinery conducted sampling and analysis for this permit application in accordance with all applicable regulations. Outfalls 001 and 002 were sampled under dry weather conditions (Form 2C) on February 14, 2006. Outfall 001 was not sampled under wet weather conditions (Form 2F) because all wastewater that goes through Outfall 001 is fully treated and it is difficult to ascertain when the actual storm water component is actually discharged because the retention time is greater than 24 hours.

Outfall 003 was sampled on February 25, 2006 under wet weather conditions (Form 2F) and on April 11, 2006 under dry weather conditions (grab sample from retention pond) and reported on the Form 2C. Reporting was conducted on the Form 2C because it has a more stringent list of parameters (including volatile organic compounds) than the Form 2F. This approach was taken because all wastewater that goes through Outfall 003 is collected, mixed, and retained (typically greater than 24 hours) and therefore provides the same effluent characterization under other sampling scenarios.

5.0 BASIS FOR PERMIT LIMITS

The Baton Rouge Refinery is regulated under the national effluent guidelines in the Code of Federal Regulations (CFR) at 40 CFR 419 (Petroleum Refinery), Subpart E (Integrated Subcategory). Calculation of permit limits at Outfall 001 is based on the effluent guidelines established by EPA. They primarily use a facility's production rates, ballast flow rate, and contaminated storm water flow rate (Table 3) to calculate the permit limits. EPA established permit limits at Outfall 001 in 1989 and 1994 based on a combination of this approach and best professional judgment (BPJ); however they did not provide for additional permit limits due to new information or increased production rates as allowed by the water quality regulations.

For this permit application, permit limits at Outfall 001 were calculated by using the 1994 permit limits as the base permit limits and then adding an additional allocation based on the difference in production rates from 1994 and 2006. This approach is consistent with the approach that DEQ established in 2000. Appendix F contains the suggested DEQ Technology Spreadsheet and Water Quality Screen for Outfall 001. Table 11 summarizes the suggested permit limits at Outfall 001 based on the DEQ Technology Spreadsheet. Documentation of the contaminated storm water flow rate is included in Appendix G.

6.0 REQUESTED PERMIT CONDITIONS

1) Monitoring frequencies at Outfall 001 should be reduced for BOD, TSS, oil & grease, COD, ammonia, and phenolic compounds based on the EPA's *Interim Guidance for Performance-based Reduction of NPDES Permit Monitoring Frequencies* (April 1996) and the Baton Rouge Refinery's excellent compliance performance. Table 12 summarizes the allowable reduced monitoring frequencies. Although the Baton Rouge Refinery experienced six exceedances for BOD (daily maximum) in August 2004, reduced monitoring frequencies are still allowable for BOD per the EPA guidance because each exceedance was not within the last year and the exceedances are not considered significant per the EPA guidance.
2) Specify that pH monitoring for continuous monitoring at Outfall 001 be conducted by EPA Method 150.2.
3) Change flow monitoring requirement at Outfall 002 from "continuous" to "estimate." The current methodology consists of a calculation from the continuous recorder on the clarifier underflow intake flow.
4) Specify that if the specific minimum quantification level (MQL) for oil & grease (4.6 mg/L) is obtained by the contract analytical laboratory, the Baton Rouge Refinery can report a value of zero on the Discharge Monitoring Reports (DMRs). The Baton Rouge Refinery received a letter of approval for this request from Mr. Jesse Chang, DEQ Industrial Water Permits on April 4, 2006.

h. **Rain Basin No. 2**

The addition of the two semi-circular rock dikes are intended to provide increased dispersion of influent water; therefore reducing water velocity and increasing retention time. The placement of the rock dikes in the impoundment will potentially reduce the fluid capacity of the impoundment by 186,600 gallons. This volume reduction is estimated to be 1% of normal operating capacity and will not have any negative impacts on facility operations.

2. **The following information is required for Type I and II facilities:**

a. **areas for isolating nonputrescible waste or incinerator ash, and borrow areas; and**

Not applicable. This facility is an existing surface impoundment, as illustrated in Figure B-2.

b. **location of leachate collection/treatment/removal system**

Rain Basin 2 does not have leachate collection and treatment facilities. The ground water monitoring system described in Section LAC 33:VII.521.F.5 is designed to detect and monitor any releases that might come from Rain Basin 2.

C. *FACILITY SURFACE HYDROLOGY*

Standards governing facility surface hydrology are contained in LAC 33:VII.717.A (Type I and II landfills), LAC 33:VII.713.A (Type I and II surface impoundments), LAC 33:VII.715.A (Type I and II landfarms), LAC 33:VII.717.C. (Type I-A and II-A facilities), and LAC 33:VII.719.C (Type III facilities).

1. **The following information regarding surface hydrology is required for all facilities:**

   a. **a description of the method to be used to prevent surface drainage through the operating areas of the facility;**

      Surface drainage at the Baton Rouge Refinery is controlled through an underground sewer network, which moves storm water through a series of Storm Water Diversion Facilities (SWDF) to the Refinery's Wastewater Treatment Plant for treatment and discharge. A system of catch basins throughout the plant intercept surface runoff before it moves through the operating areas.

      Per LAC 33.VII.713.A.6, the existing surface impoundments of Rain Basin 2 are not required to comply with the regulations relative to surface-run-off-diversion or surface-run-off-devices.

   b. **a description of the facility runoff/run-on collection system;**

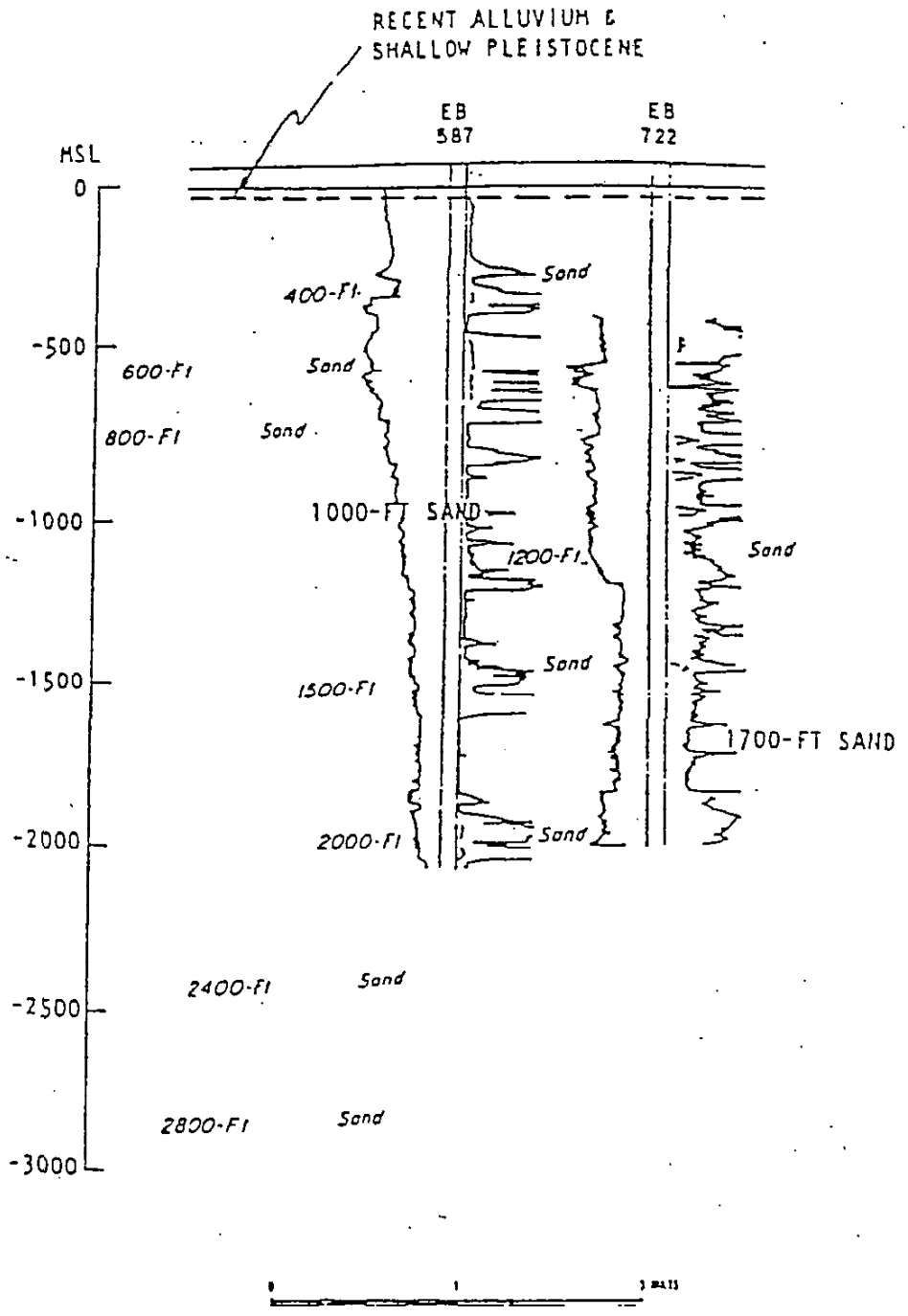
      See Appendix H (Facilities Operations Plan) for a description of the runoff/run-on collection system.

   c. **the maximum rainfall from a 24-hour/25-year storm event;**

      The maximum rainfall in 24 hours was 12.08 inches recorded in April 1967 (Hydrogeological Studies Report in Baton Rouge Refinery by Dames & Moore, 1980). The maximum rainfall for a 25-year storm event is 8.8 inches ("Rainfall Frequency/Magnitude Atlas for South-Central United States" by Faires, Kiem and Muller).

   d. **the location of aquifer recharge areas in the site or within 1,000 feet of the site perimeter, along with a description of the measures planned to protect those areas from the adverse impact of operations at the facility; and**

      The major portion of all fresh ground water produced in the Baton Rouge area is derived from 12 aquifers ranging in age from Pleistocene to Miocene. These aquifers are named by the depths of occurrence and are shown in Figure C-1. The aquifers are discontinuous and of variable thickness. The individual sands may be absent at a particular location. Freshwater has been produced from a maximum depth of 3,100 feet below sea level from the "2,800 foot" sand.



SOURCE: DAMES & MOORE; HYDROGEOLOGICAL STUDIES
HAZARDOUS WASTE MANAGEMENT FACILITIES
BATON ROUGE REFINERY; FEBRUARY 1980

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FIGURE C-1

AQUIFERS-BATON ROUGE AREA (VICINITY OF EXXON REFINERY)

LAC33:VII.521.C.1.d.

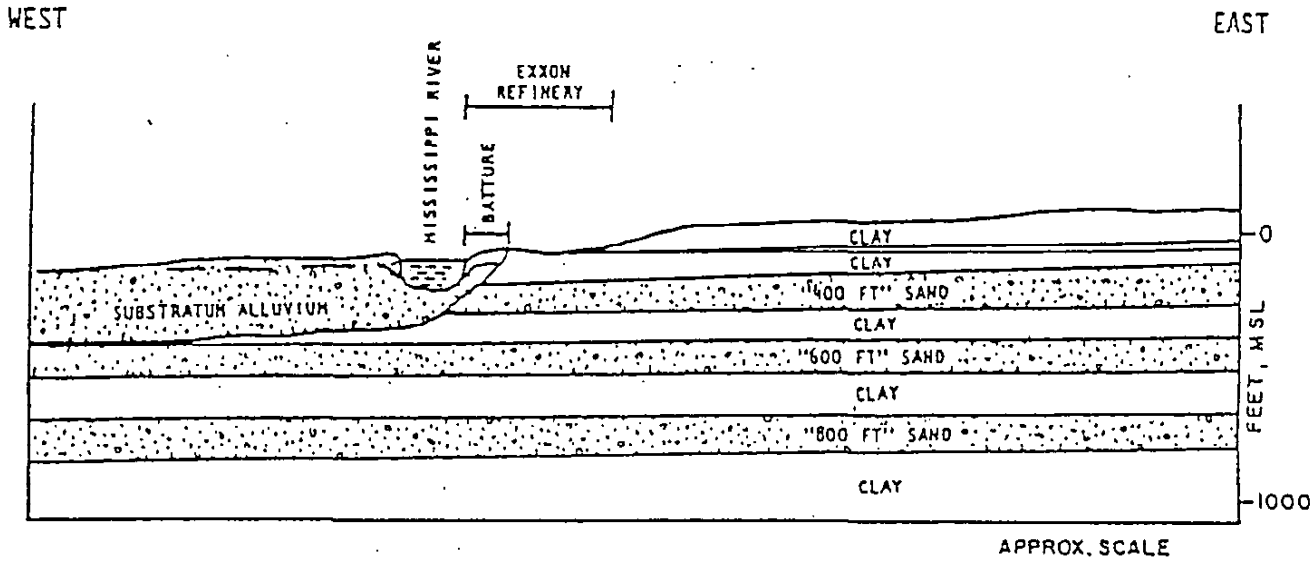
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA

The relationship between the various aquifers present beneath the refinery site is shown in Figure C-2. A major buried channel exists beneath, and to the west of, the Mississippi River. This broad valley has been filled with recent alluvium and forms the present land surface over which the Mississippi River flows. The connection between this alluvial material and the "400-foot" sand and upper unit is readily apparent. The subsurface valley also intersects the "600-foot" sand west of the section.

The "400-foot" and "600-foot" aquifers in the Baton Rouge area are considered to be the subsurface equivalent of Pleistocene terrace deposits exposed at land surface in northern East and West Feliciana Parishes (Morgan 1963). Recharge areas for the deeper aquifers (i.e., the "1700-foot" and "2000-foot" aquifers) are believed to be north of the Louisiana/Mississippi boundary.

e. **if the facility is located in a flood plain, a plan to ensure that the facility does not restrict the flow of the 100-year base flood or significantly reduce the temporary water-storage capacity of the flood plain, and documentation indicating that the design of the facility is such that the flooding does not affect the integrity of the facility or result in the washout of solid waste.**

The facility is located in the batture area adjacent to the Mississippi River. The batture area is located in the 100-year base flood plain. The banks of Rain Basin 2 are at an elevation of 45 feet MSL. The weir of Rain Basin 2 is at 33.5 feet MSL. During Mississippi River floods, it is possible for floodwater to overflow the coffer dam and enter Rain Basin 2 (the highest recorded flood level of the river was 43.5 feet MSL in 1983). However, the facility receives only incidental solids from storm water run-off. A flood occurrence will not result in an increase in solids to the river. The facility has been in operation since the 1970's with no record of problems arising from flooding. Per LAC 33.VII.713.A.6, the existing surface impoundments are not required to comply with the regulations relative to restricting the 100-year base flood flow and temporary water-storage capacity of the flood plain. All discharges are managed under the current NPDES permit.



NOTE: HYDRAULIC CONNECTION BETWEEN SUBSTRATUM ALLUVIUM AND 400 FT SAND. ALSO POSSIBLE CONNECTION WITH 600 FT SAND FURTHER WEST. FLOW DIRECTION DEPENDENT ON RELATIVE PIEZOMETRIC LEVELS.

SOURCE: DAMES & MOORE; HYDROGEOLOGICAL STUDIES HAZARDOUS WASTE MANAGEMENT FACILITIES BATON ROUGE REFINERY; FEBRUARY 1980

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FIGURE C-2
RELATIONSHIP BETWEEN AQUIFERS BENEATH THE BATON ROUGE REFINERY
LAC33:VII.521.C.1.d.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA

D. *FACILITY GEOLOGY*

Standards governing facility geology are contained in LAC 33:VII.709.C (Type I and II facilities), LAC 33:VII.717.D (Type I-A and II-A facilities), and LAC 33:VII.719.D (Type III facilities).

LDEQ Comment:

521.D *According to the information submitted, it appears that the facility does not meet the minimum boring requirements of the Solid Waste Regulations as stipulated in LAC 33:VII.709.C.1.c.*

The borings should meet the minimum depth and sampling frequency requirements. All borings should be continuously sampled to at least thirty (30) feet below the base of excavation. At least ten percent of the borings (minimum of three borings) shall extend to 100 feet below the grade level to characterize the shallow geology.

Any additional boring should indicate where groundwater is first encountered.

ExxonMobil Response:

Over the past twenty years, the geology and hydrogeology in this part of the Baton Rouge Refinery have been extensively characterized. In addition, soil borings DM-11, DM-14, and W-20, located in the immediate vicinity of Rain Basin No. 2, have been advanced to depths greater than 100 feet below grade levels of this area. Copies of the boring logs for the facility have been included in Appendix D of this document.

1. **The following information regarding geology is required for Type I and II facilities:**

   a. **isometric profile and cross-section of soils, by type, thickness, and permeability;**

   Since these facilities are existing, isometric profiles of soil to a depth of 20 feet below the lowest excavation do not exist. Soil profiles have, however, been taken in the general area of the facility.

   The soil-boring information collected at the site indicates that two contrasting hydrogeologic environments within the shallow subsurface soils exist in the ExxonMobil waste-treatment area: (1) the relatively impermeable clays of Pleistocene age; and (2) the recent alluvial deposits (often referred to as Batture deposits) of the Mississippi River, consisting of less compact clays, silts and some sands (Geraghty & Miller Draft Report: Assessment of Ground Water Quality and Installation of Monitor Well Network at the Waste Treatment Area, Baton Rouge Refinery).

   - Pleistocene Clays

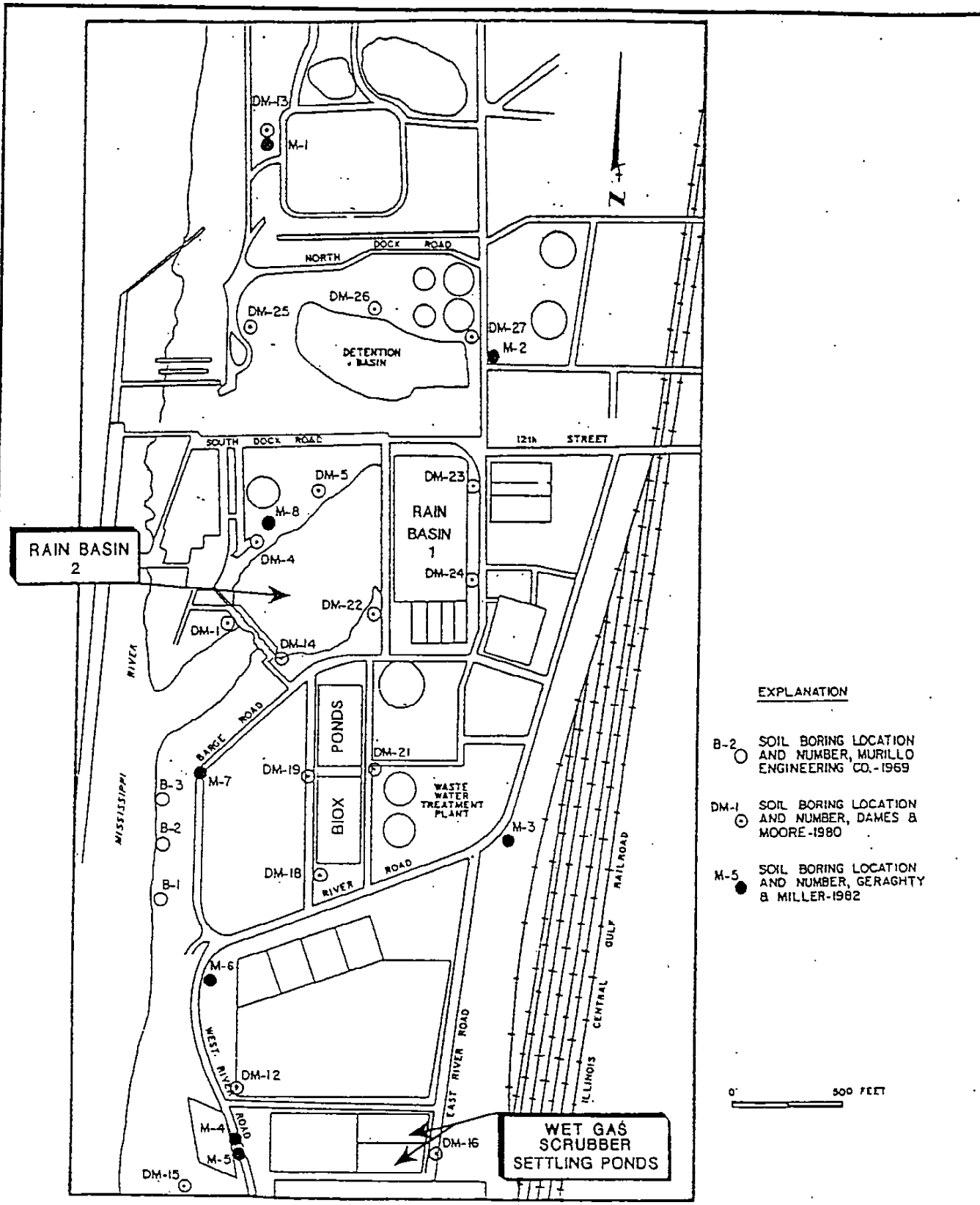
The Pleistocene sediments are primarily compacted clays (CH) with isolated zones of silty and sandy clays (CH or CL). Thin silt and silty sand lenses (ML or SM) are present in the Pleistocene clay, but they are generally of limited areal extent. The vertical permeability of this unit is very low; compact clays commonly have permeability's of $1*10^{-8}$ cm/sec or less. The Pleistocene clays represent an aquiclude that is at least 140 ft. thick (Geraghty & Miller Draft Report: Assessment of Ground Water Quality and Installation of Monitor Well Network at the Water Treatment Area, Baton Rouge Refinery).

A considerable thickness of Pleistocene clays was logged in the eastern part of the study area, in borings M-2 and M-3 by Geraghty & Miller in 1982. The locations of these soil borings are shown in Figure D-1. Boring M-2 encountered the Pleistocene from approximately 23 to 115 ft. below land surface. Boring M-3 encountered the hard Pleistocene clays at depths of 16 to 128 ft. below land surface. The boring penetrated primarily stiff clays with a silt lens from 38 to 47 ft. below land surface. Both borings failed to reach any deep sands and terminated in very hard clay. The borings were abandoned at their total depth by plugging the borehole from bottom to ground surface with cement.

- Alluvial Sediments

Most of the waste-treatment area is situated on loosely consolidated flood-plain deposits consisting primarily of unconsolidated clays (usually CH or OH) with some lenses of silt (MC) and sand (SM).

These sediments were deposited in the incised erosional channel of the pre-historic Mississippi River and are therefore much younger than the Pleistocene sediments. Detailed boring information, as shown on six generalized cross-sections, A-A', B-B', C-C', D-D', E-E'and F-F' (Figures D-2 through D-7), indicate that the upper surface of the waste treatment area is covered with 5 to more than 30 feet of rubble and fill materials. The fill consists of materials that have been deposited throughout the refinery's history. The materials originated from the Mississippi River and the refinery site and may be characteristically similar to materials stored in the solid waste facilities. The natural soil below the fill is generally clay of low permeability about 10 to 30 feet thick. It is uncertain by 10 to 60 feet of loosely consolidated, tan and gray silty clay and clayey silts, imbedded with relatively thin lenses of clays, silt, and sand of limited lateral extent. Near the river, the silt/clay unit is underlain by very permeable sand and gravel, more than 30 feet thick. The total thickness of the alluvial deposits beneath the site is estimated to be between 200 and 250 feet.



SOURCE: GERAGHTY & MILLER; ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA BATON ROUGE REFINERY, AUGUST 1983.

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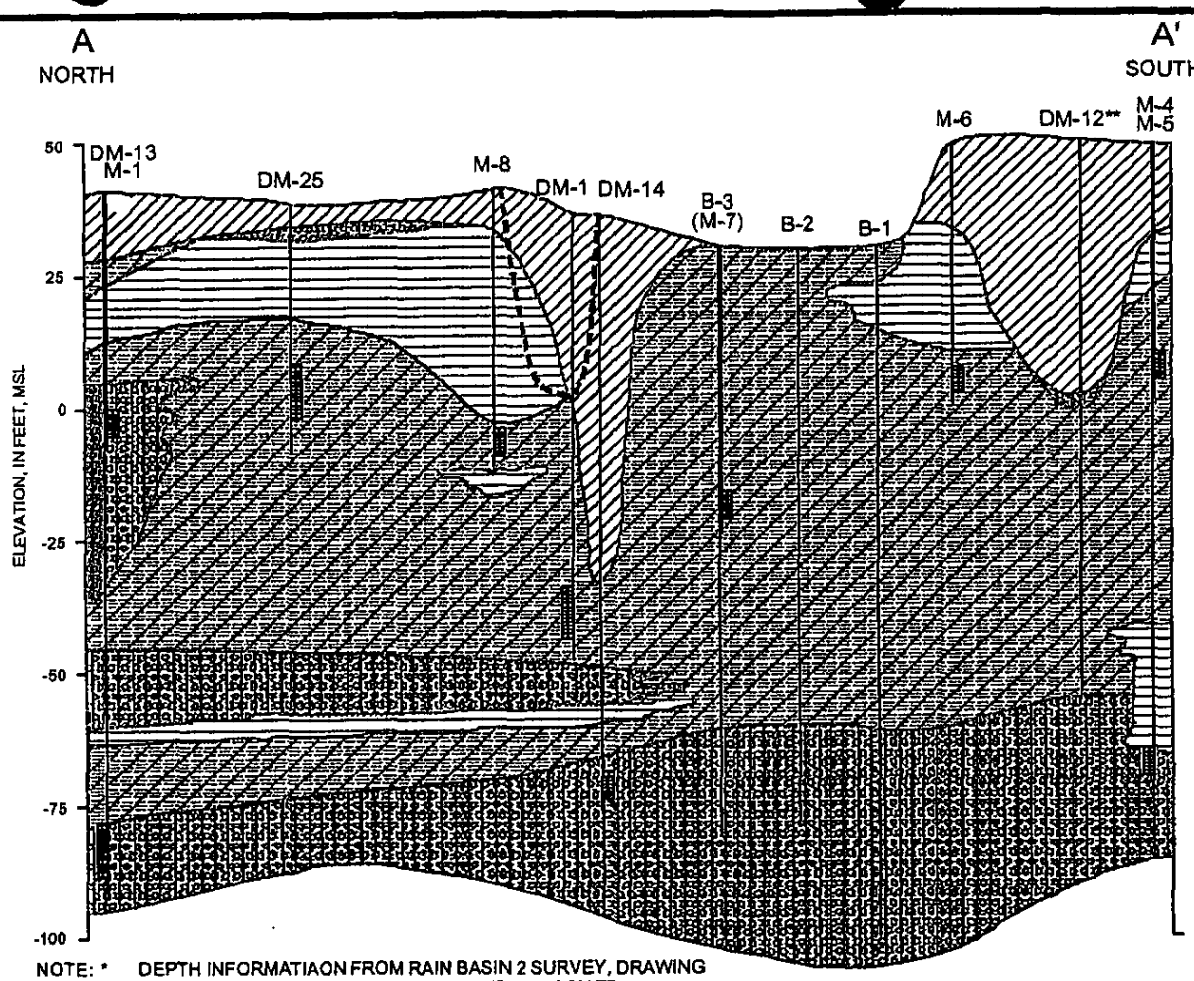
FIGURE D-1
SOIL BORING LOCATIONS
LAC33:VII.521.D.1.a.

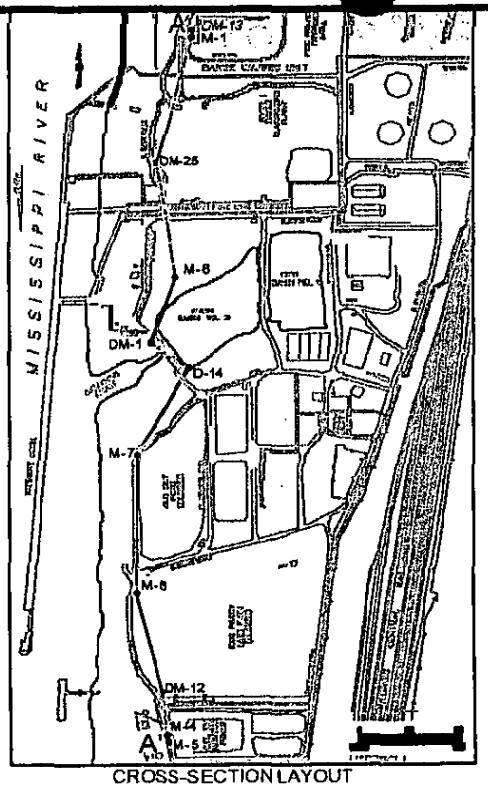
EXXON COMPANY U.S.A.
BATON ROUGE, LOUISIANA



NOTE: * DEPTH INFORMATIAON FROM RAIN BASIN 2 SURVEY, DRAWING *NO. C-15-0089-03*, DATED 3/ 5/ 01 , CK AND ASSOCIATES.

** WELL CONSTRUCTION DETAILS NOT AVAILABLE FOR DM-12.

CROSS-SECTION SOURCE: GERAGHTY & MILLER; *ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA, BATON ROUGE REFINERY* ; AUGUST 1983.



CROSS-SECTION LAYOUT

EXPLANATION

- CLAY
- SILT, SAND, GRAVEL
- SILTY CLAY, CLAYEY SILT
- FILL
- RAIN BASIN 2, APPROXIMATE DEPTH PROFILE*
- WELL SCREEN INTERVAL

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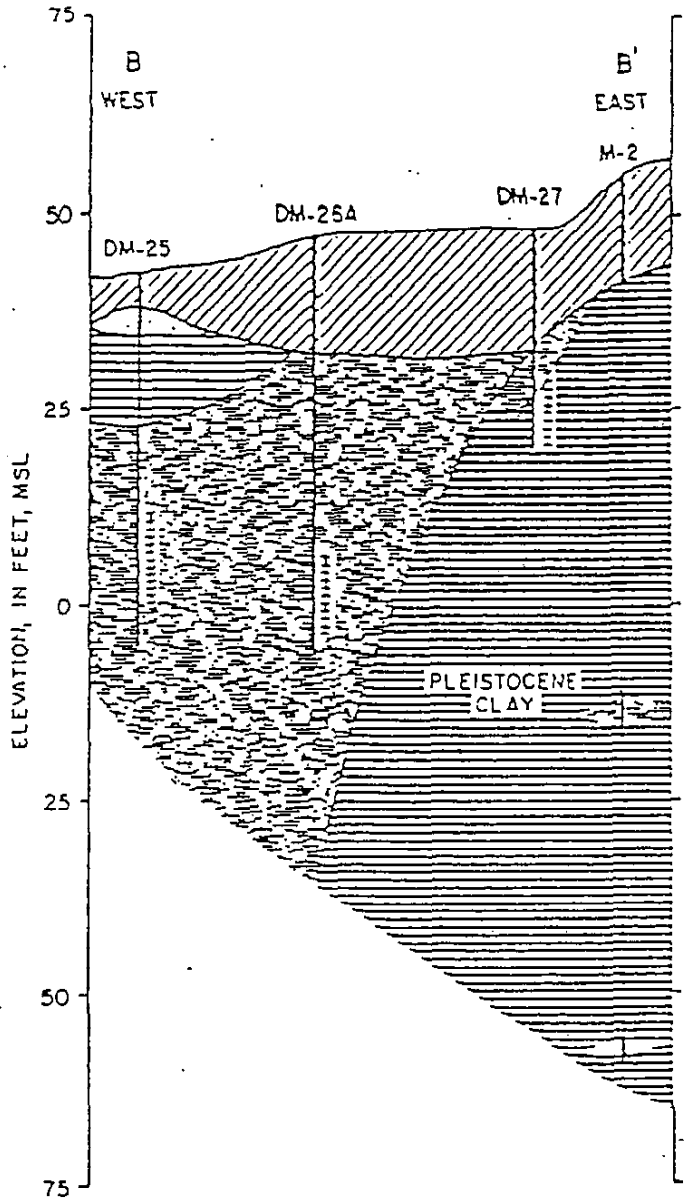
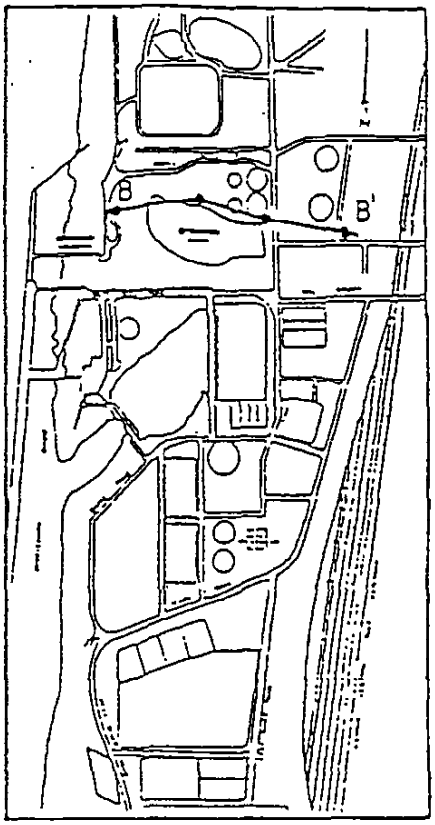
DATE: 04/27/04	SCALE: AS SHOWN	REV.:
W.O.NO.: 0016262A202 004		

FIGURE D-2
GEOLOGIC CROSS-SECTION A-A'
LAC33:VII.521.D.1.a.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA

ERM.





EXPLANATION

- CLAY
- SILTY CLAY, CLAYEY SILT
- SILT, SAND, GRAVEL
- FILL

0 500 FEET

SOURCE: GERAGHTY & MILLER; ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA BATON ROUGE REFINERY; AUGUST 1983

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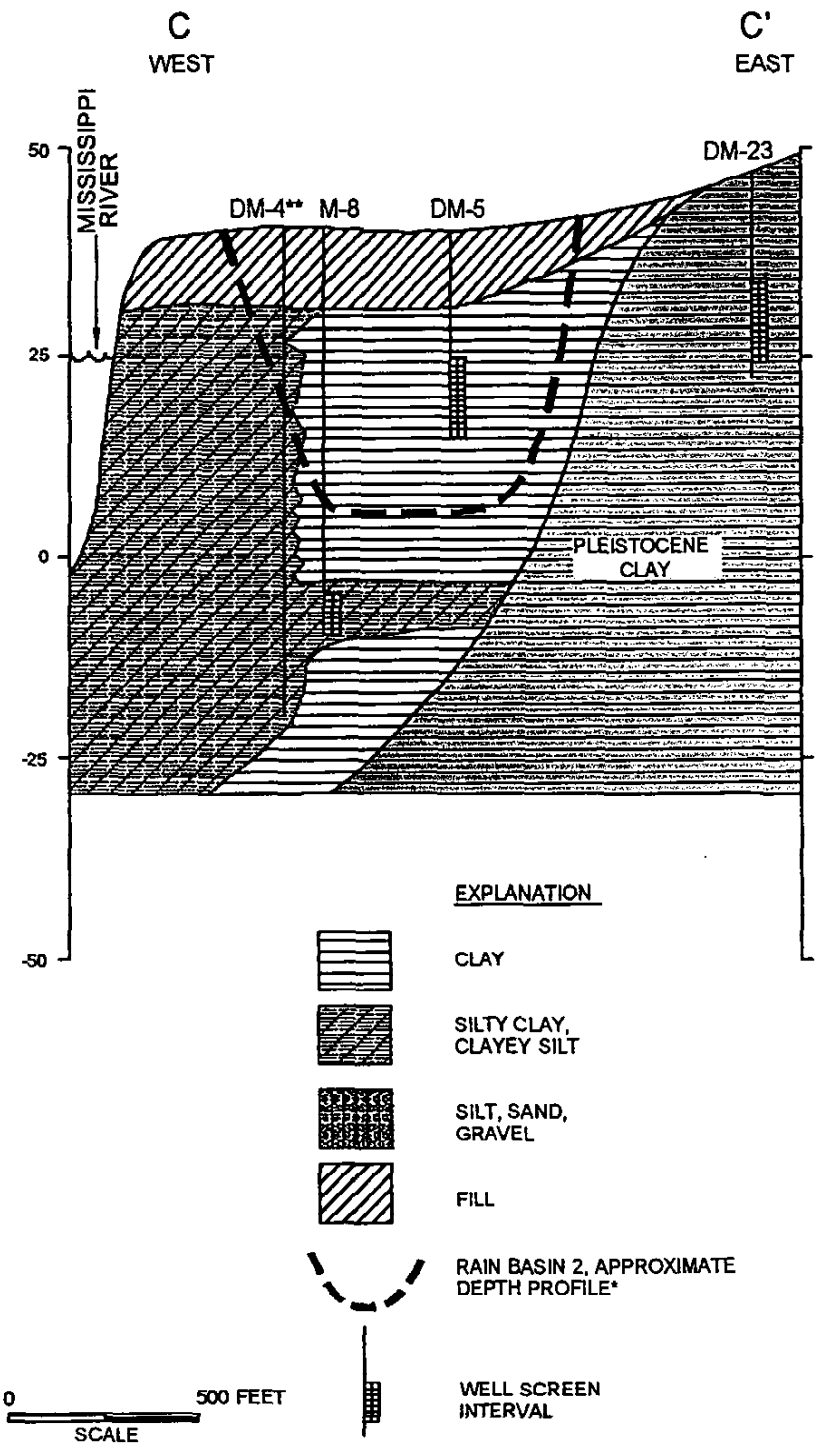
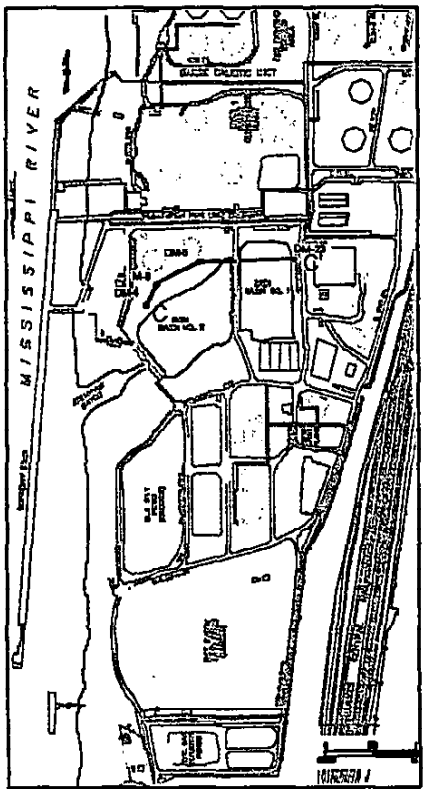
FIGURE D-3
GEOLOGIC SECTION B-B'
LAC33:VII.521.D.1.a.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA





CROSS-SECTION LAYOUT

NOTE: * DEPTH INFORMATIAON FROM RAIN BASIN 2 SURVEY, DRAWING NO. C-15-0089-03, DATED 3/5/01 , CK AND ASSOCIATES.

** WELL CONSTRUCTIN DETAILS NOT AVAILABLE FOR DM-4.

CROSS-SECTION SOURCE: GERAGHTY & MILLER; *ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA, BATON ROUGE REFINERY* ; AUGUST 1983.

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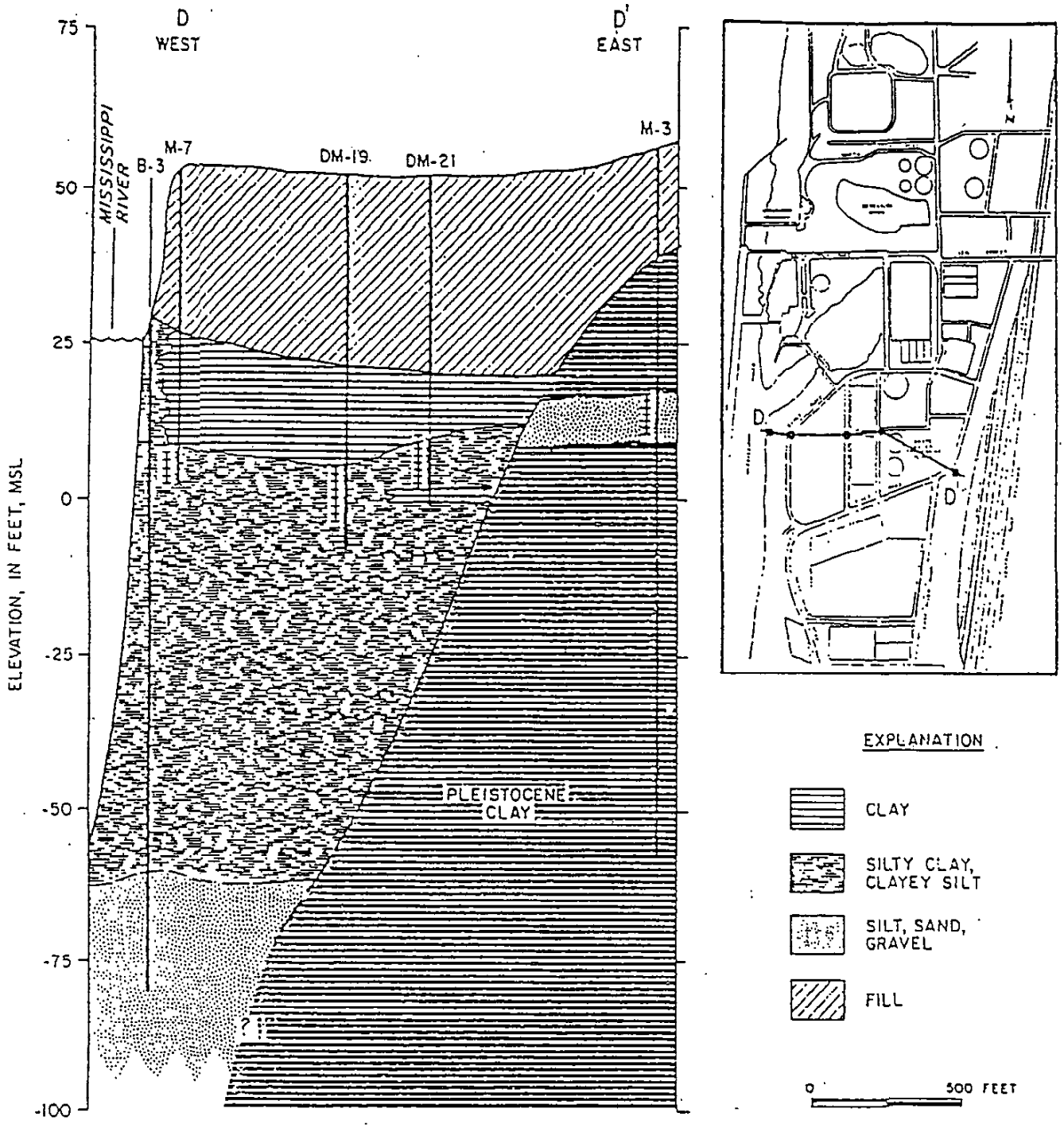
DATE: 04/28/04	SCALE: AS SHOWN	REV.:
W.O.NO.: 0016262A201 D04		

FIGURE D-4
GEOLOGIC CROSS-SECTION C-C'
LAC33:VII.521.D.A.a.
Exxon Company, U.S.A.
Baton Rouge, Louisiana

ERM.



SOURCE: GERAGHTY & MILLER; ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA, BATON ROUGE REFINERY; AUGUST 1983

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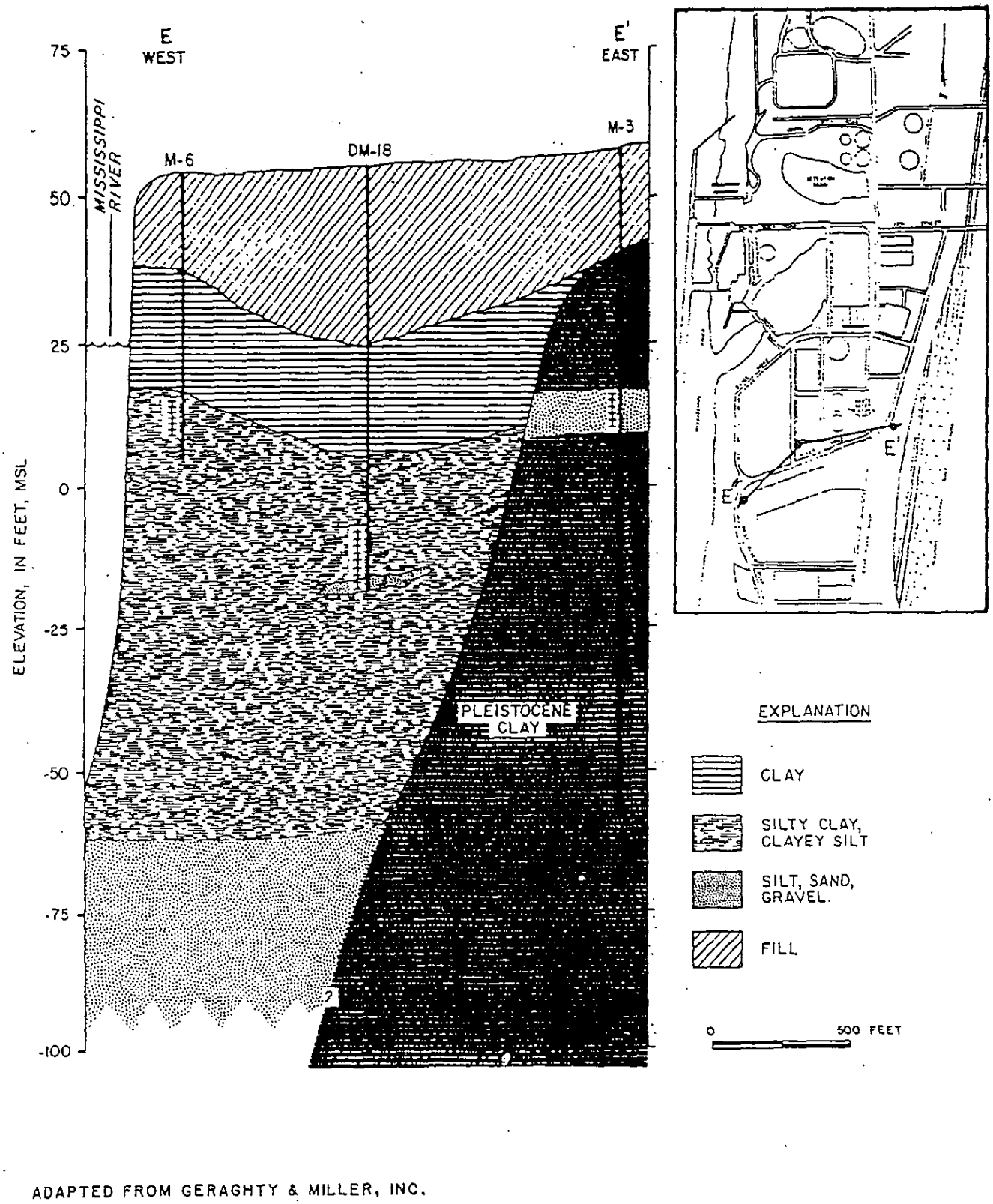
FIGURE D-5

GEOLOGIC CROSS-SECTION D-D'

LAC33:VII.521.D.1.a.

EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA



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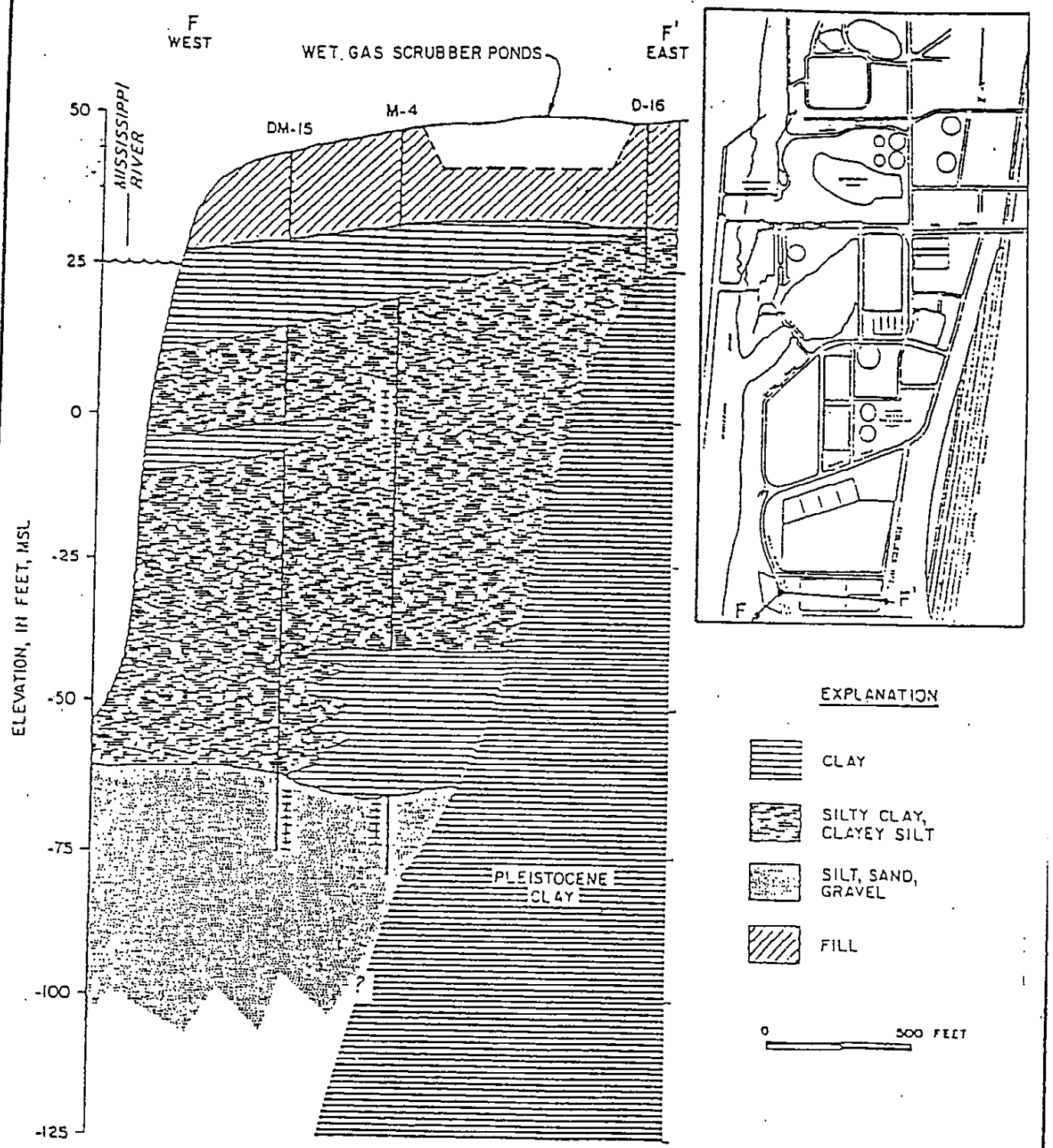
313806

FIGURE D-6

GEOLOGIC CROSS-SECTION E-E'
LAC33:VII.521.D.1.a.
EXXON COMPANY, U. S. A.
BATON ROUGE, LOUISIANA



SOURCE: GERAGHTY & MILLER, AUGUST 1983

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FIGURE D-7

GEOLOGIC CROSS-SECTION F-F'
LAC33:VII.521.D.1.a.
EXXON COMPAY, U.S.A.
BATON ROUGE, LOUISIANA

DATE 12/93 | W.O.NO. 14-134

LDEQ Comment:

521.D.1.a *Please provide geological cross-sections that incorporate all borings located in the vicinity of Rain Basin No. 2. Cross-sections should depict the monitoring well/piezometers, boring logs, and screen intervals. Please note that cross-sections should be developed for each transect of the boring grid pattern. Also note that cross-sections should show the maximum depth of the impoundments.*

ExxonMobil Response:

Two cross sections depicting the geology at Rain BasinNo. 2, i.e., A-A' and C-C' have been revised to show monitor well-screen depth intervals. In addition, the depth profile of Rain Basin No. 2 has been added. Revised geological cross sections A-A' and C-C' are attached as figures D-1 and D-4, respectively.

b. logs of all known soil borings taken on the facility and a description of the methods used to seal abandoned soil borings;

Appendix D contains logs of soil borings obtained during the installation of monitoring wells. Since that time, several of the wells have been plugged and abandoned. The report to plug and abandon these wells is also provided in Appendix D.

In general the Refinery will provide for the sealing of any vertical migration path resulting form exploratory boring and/or monitoring programs.

Any additional borings made for evaluating the site will be completely filled from bottom to top with cement. The hole will be left open only as necessary to obtain core samples, water samples, and establish the initial water level. If subsequent samples or water level readings are to be taken, the hole will be completed as a well with suitable casing and sealing of the annulus between the hole and the casing.

LDEQ Comment:

521.D.1.b *No boring logs were found in Appendix D for borings M-8, DMS-3, and DMS-4.*

Please note that logs of all borings located in the vicinity of Rain Basin No. 2 shall be submitted.

ExxonMobil Response:

Copies of the requested boring logs have been included in Appendix D of this document.

c. **results of tests for classifying soils (moisture contents, Atterberg limits, gradation, etc.), measuring soil strength, and determining the coefficients of permeability, and other applicable geotechnical tests;**

Unified Soil Classifications (USC) for boring samples are provided with the logs in Appendix D. The typical stratigraphy is described in Section LAC 33:VII.521.D.1.a above. Definitions of the USC designations are given in Appendix D.

The properties of the soils in this area have not been studied in detail for this report. However, the characteristics of the Pleistocene clays which were encountered by Etco Engineers (1971) in their investigation of a northerly parcel of land within the refinery are believed to be representative. This material is stiff to very stiff with shear strength generally in excess of 3 tons per square foot (tsf). The liquid limit was found to be between 35 and 82, and the plasticity index between 17 and 60, indicating a low permeability. Field permeability and some geotechnical testing results for some of the soil borings described in Appendix D are provided in Tables D-1through D-4. The Pleistocene clay can be characterized by desiccation planes (slickensides), which may modify its properties when considering the performance of the material in situ. These planes could provide a pathway for the migration of contaminants (if they were numerous and interconnected) but the rate of movement would be extremely low (similar to clay without slickensides) (Excerpt form Dames and Moore, Addendum to Report Hydrogeologic Studies, Hazardous Waste Management Facilities Baton Rouge Refinery, April 17, 1980).

d. **geologic cross-section from available published information depicting the stratigraphy to a depth of at least 200 feet below the ground surface;**

Detailed cross-sections to depths of approximately 200 feet are presented as Figures D-2 through D-7. A generalized cross-section depicting the stratigraphy beneath the site (to a depth of +1000 feet) is provided as Figure C-2.

e. **for faults mapped as existing through the facility, verification of their presence by geophysical mapping or stratigraphic correlation of boring logs. If the plane of the fault is verified within the facility's boundaries, a discussion of measures that will be taken to mitigate adverse effects on the facility and the environment;**

No known faults have been mapped as existing through the facility.

Table D-1

Field Permeability Test Results

Well No.	Soil Type	Permeability (cm/sec)
DM-1	Silt & Clay	8.64×10^{-5}
DM-4	Silt	4.98×10^{-6}
DM-5	Clay, Silt &Sand	3.81×10^{-6}
DM-6	Silt & Clay	1.83×10^{-5}
DM-7	Silt & Clay	8.42×10^{-6}
DM-8	Silt & Clay	4.12×10^{-4}
DM-9	Silt & Clay	2.25×10^{-5}
DM-10	Sand	4.30×10^{-3}
DM-11	Sand & Clay	2.70×10^{-4}
DM-12	Sand & Silt	4.82×10^{-3}

Table D-2
In Situ Permeability of Soil Borings*
Exxon Baton Rouge

Well #	Depth (ft.)	L (CM)	t (SEC)	Ho (CM)	HI (CM)	In (Ho/HI)	K (CM/SEC)
MW-A	5	15.24	1800	228.6	226.8	7.9×10^{-3}	6.7×10^{-5}
	10	15.24	1080	381.0	375.2	1.5×10^{-2}	2.1×10^{-4}
	15	15.24	360	533.4	466.3	1.3×10^{-1}	5.5×10^{-3}
	20	15.24	900	685.8	657.5	4.2×10^{-2}	7.1×10^{-4}
MW-D	5	Test not valid for this interval.					
	10	15.24	900	502.9	501.7	2.4×10^{-3}	4.1×10^{-5}
MW-E	5	15.24	1080	350.5	343.5	2.0×10^{-2}	2.8×10^{-4}
	10	15.24	900	502.9	483.1	4.0×10^{-2}	6.8×10^{-4}
MW-G	5	15.24	900	350.5	347.5	8.6×10^{-3}	1.5×10^{-4}
	10	15.24	600	502.9	460.3	8.9×10^{-2}	2.3×10^{-3}

Table D-3

In Situ Permeability of Screened Intervals*

Well No.	Hydraulic Conductivity K (cm/sec)
MW-A	$2.5x10^{-5}$
MW-B	Insufficient water to perform test
MW-C	$3.4x10^{-5}$
MW-D	Insufficient water to perform test
MW-E	$1.3x10^{-4}$
MW-F	$1x10^{-4}$
MW-G	$2.5x10^{-4}$
MW-H	$4x10^{-5}$

TABLE D-4

Deuel and Zahray Laboratories, Inc.

P.O. Box 3006
College Station, TX 77841

July 23, 1986

Telephone
(409) 693-311

ERM Southwest, Inc.

Soil Samples Submitted 06/30/86

Sample ID	% Moisture, as Received	Bulk Density, g/cm^3
MW A	18.6	1.79
MW B	31.2	1.68
MW C	44.8	1.75
MW D	29.3	1.72
MW E	28.7	1.65
MW F	41.7	1.68
MW G	23.0	1.61
MW H	20.2	1.76

Sample ID	-Particle Size Distribution- % Sand	% Silt	% Clay	Hydraulic Conductivity cm/hour
MW A	≤1	74.7	25.3	0.112
MW B	≤1	43.0	56.4	0.013
MW C	≤1	33.6	66.4	0.003
MW D	12.0	60.2	27.8	0.107
MW E	≤1	48.3	49.9	0.053
MW F	5.0	71.9	23.1	0.006
MW G	18.9	63.5	17.6	insf*
MW H	14.2	64.8	21.0	0.040

Sample ID	Liquid Limit, %	Plastic Limits, %
MW A	28.1	16.7
MW B	64.9	18.8
MW C	68.6	30.0
MW D	35.9	15.6
MW E	30.7	17.6
MW F	59.6	24.3
MW G	28.6	17.9
MW H	29.1	19.6

*Insufficient Sample

Robert K. Zahray
Laboratory Manager

f. **for a facility located in a seismic impact zone, a report with calculations demonstrating that the facility will be designed and operated so that it can withstand the stresses caused by the maximum ground motion, as provided in LAC 33:VII.709.C.2; and**

The facility is not located in a seismic impact zone, as shown in Appendix A. The facility is located in "Zone 1". The maximum acceleration from earthquake activity for this seismic zone is 0.1 g or 3.22 ft/sec^2.

g. **for a facility located in an unstable area, a demonstration of facility design as provided in LAC 33:VII.709.C.3.**

The facility is not known to be located in an unstable area. As discussed in the above response, Zone 1 represents an area of very low impact from earthquake activity, and is not considered an unstable area.

2. **The following information regarding geology is required by Type III woodwaste, and construction /demolition-debris facilities:**

a. **General description of the soils provided by a qualified professional (a geotechnical engineer, soil scientist, or geologist) along with a description of the method used to determine soil characteristics; and**

Not applicable. This facility is not a Type III woodwaste or construction/demolition-debris facility.

b. **Logs of all known soil borings taken on the facility and a description of the methods used to seal abandoned soil borings.**

Not applicable. This facility is not a Type III woodwaste or construction/demolition-debris facility.

E. FACILITY SUBSURFACE HYDROLOGY

1. **The following information on subsurface hydrology is required for all Type I facilities and Type II landfills and surface impoundments:**

   a. **delineation of the following information for the water table and all permeable zones from the ground surface to a depth of at least 30 feet below the base of excavation:**

      i. **areal extent beneath the facility;**

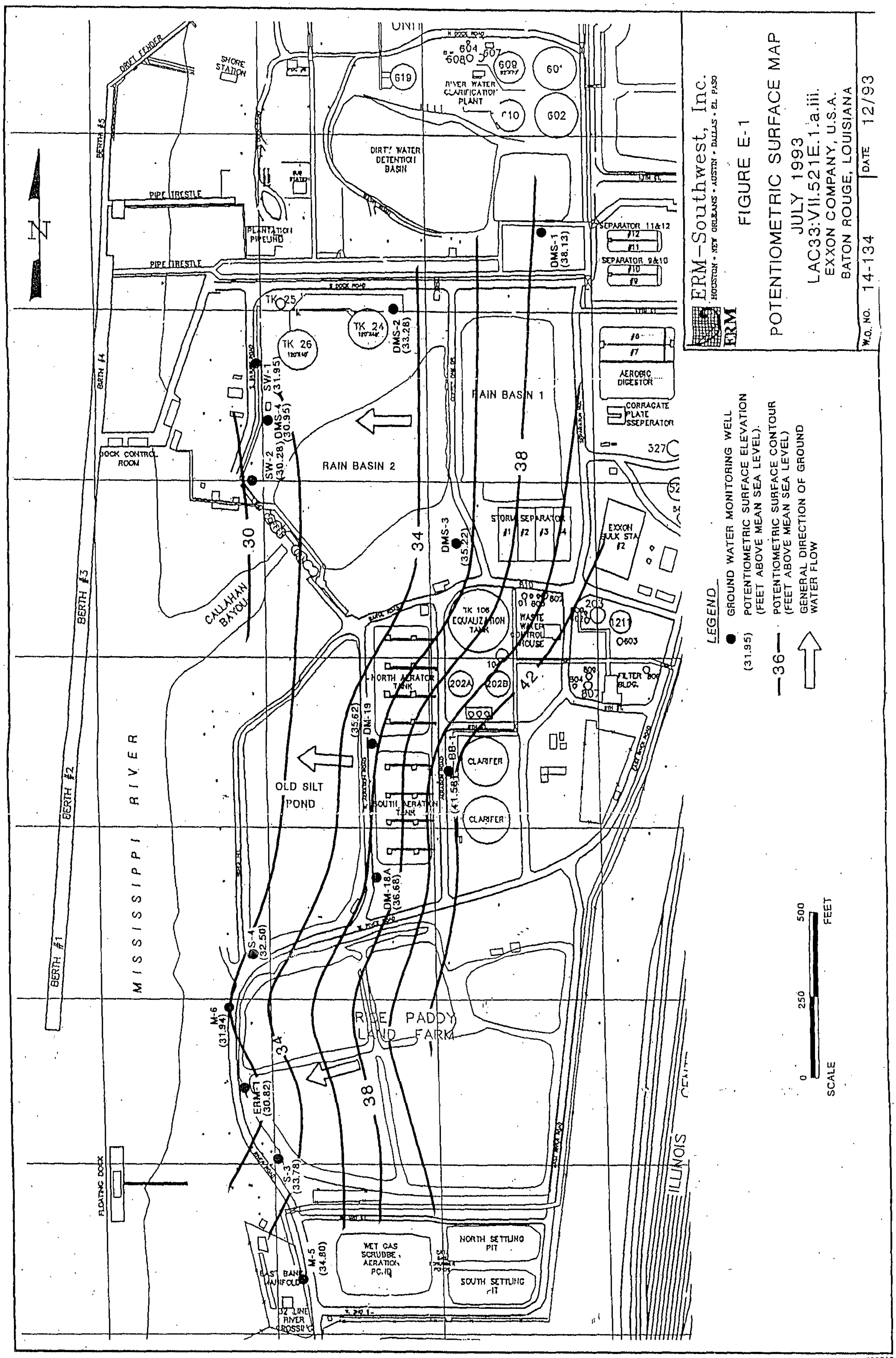
      The uppermost water bearing zone capable of bearing other than trace amounts of water at the site is the clayey to sandy silt first encountered within alluvial sediments at elevation +25 to +10 (MSL). This zone appears to be continuous beneath Rain Basin 2.

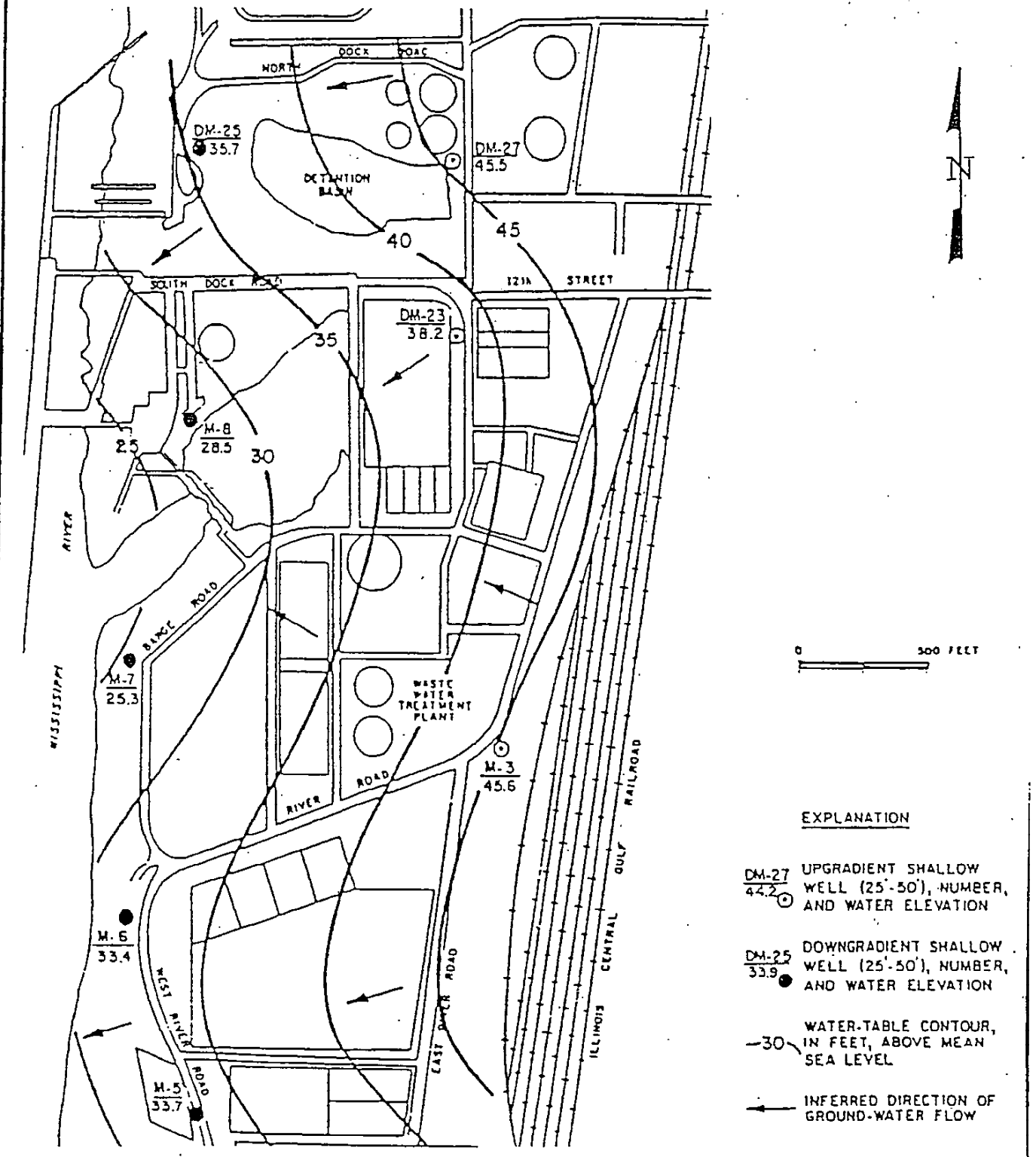
      ii. **thickness and depth of the permeable zones and fluctuations;**

      The upper surface of the waste-treatment area is covered with 5 to more than 30 feet of rubble and fill materials. The fill consists of materials that have been deposited throughout the refinery's history. The materials originated from the Mississippi River and the refinery site and may be characteristically similar to materials stored in the solid waste facilities. The natural soil below the fill is generally clay of low permeability about 10 to 30 feet thick. It is underlain by 10 to 60 feet if loosely consolidated, tan and gray silty clay and clayey silts, interbedded with relatively thin lenses of clays, silt, and sand of limited lateral extent. Near the river the silt/clay unit is underlain by very permeable sand and gravel more than 30 feet thick. The total thickness of the alluvial deposits beneath the site is estimated to be 200 to 250 feet.

      iii. **direction(s) and rate(s) of groundwater flow based on information obtained from piezometers and shown on potentiometric maps; and**

      As shown in Figures E-1 through E-4, the contours of the shallow water table indicate that regardless of the season, the direction of the shallow ground water flow is west toward the Mississippi River, although a reversal of flow could occur during prolonged periods of high river stage.


ERM-Southwest, Inc.
HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • EL PASO
FIGURE E-1
POTENTIOMETRIC SURFACE MAP
JULY 1993
LAC33:VII.521E.1.a.iii.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA
W.O. NO. 14-134
DATE 12/93
LEGEND
GROUND WATER MONITORING WELL
(31.95) POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL).
—36— POTENTIOMETRIC SURFACE CONTOUR (FEET ABOVE MEAN SEA LEVEL)
GENERAL DIRECTION OF GROUND WATER FLOW
SCALE
0
250
500
FEET
MISSISSIPPI RIVER
BERTH #1
BERTH #2
BERTH #3
BERTH #4
BERTH #5
RAIN BASIN 1
RAIN BASIN 2
OLD SILT POND
CALLAHAN BAYOU
RICE PADDY LAND FARM
DIRTY WATER DETENTION BASIN
RIVER WATER CLARIFICATION PLANT
DMS-1 (38.13)
DMS-2 (33.28)
DMS-3 (35.22)
DMS-4 (30.95)
SW-1 (31.95)
SW-2 (30.28)
DM-19 (35.62)
DM-18A (36.68)
BB-1 (41.58)
S-4 (32.50)
M-6 (31.94)
ERM-1 (30.82)
S-3 (33.78)
M-5 (34.80)
30
34
38
42
NORTH SETTLING PIT
SOUTH SETTLING PIT
WET GAS SCRUBBER AERATION POND
NORTH AERATOR TANK
SOUTH AERATION TANK
CLARIFIER
TK 106 EQUALIZATION TANK
WASTE WATER CONTROL HOUSE
FILTER BLDG.
AEROBIC DIGESTOR
CORRAGATE PLATE SSEPERATOR
STORM SEPARATOR
EXXON BULK STA #2
DOCK CONTROL ROOM
PLANTATION PIPELINE
PIPE TRESTLE
SHORE STATION
FLOATING DOCK
ILLINOIS CENTRAL
SEPARATOR 11&12
SEPARATOR 9&10



SOURCE: GERAGHTY & MILLER; ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA, BATON ROUGE REFINERY; AUGUST 1983

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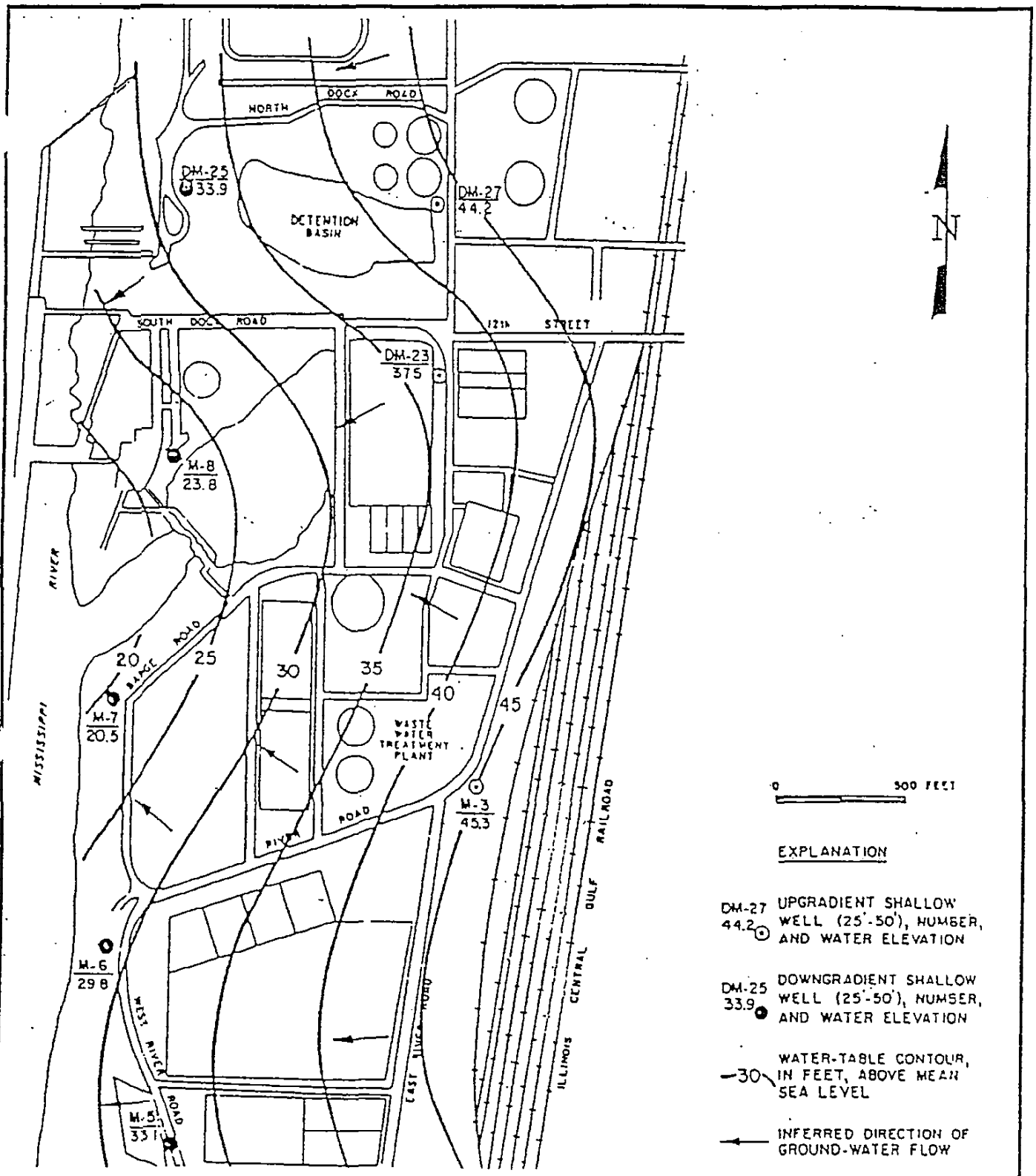
DATE 12/93 | W.O.NO. 14-134

FIGURE E-2

WATER TABLE SURFACE SHALLOW ZONE
2nd. QUARTER, 1992
LAC33:VII.521.E.1.a.iii.
BATON ROUGE, LOUISIANA
EXXON COMPANY, U.S.A.



SOURCE: GERAGHTY & MILLER; ASSESSMENT OF GROUND WATER QUALITY AND INSTALLATION OF MONITOR WELL NETWORK AT THE WASTE TREATMENT AREA, BATON ROUGE REFINERY; AUGUST 1983

ERM-Southwest, Inc.
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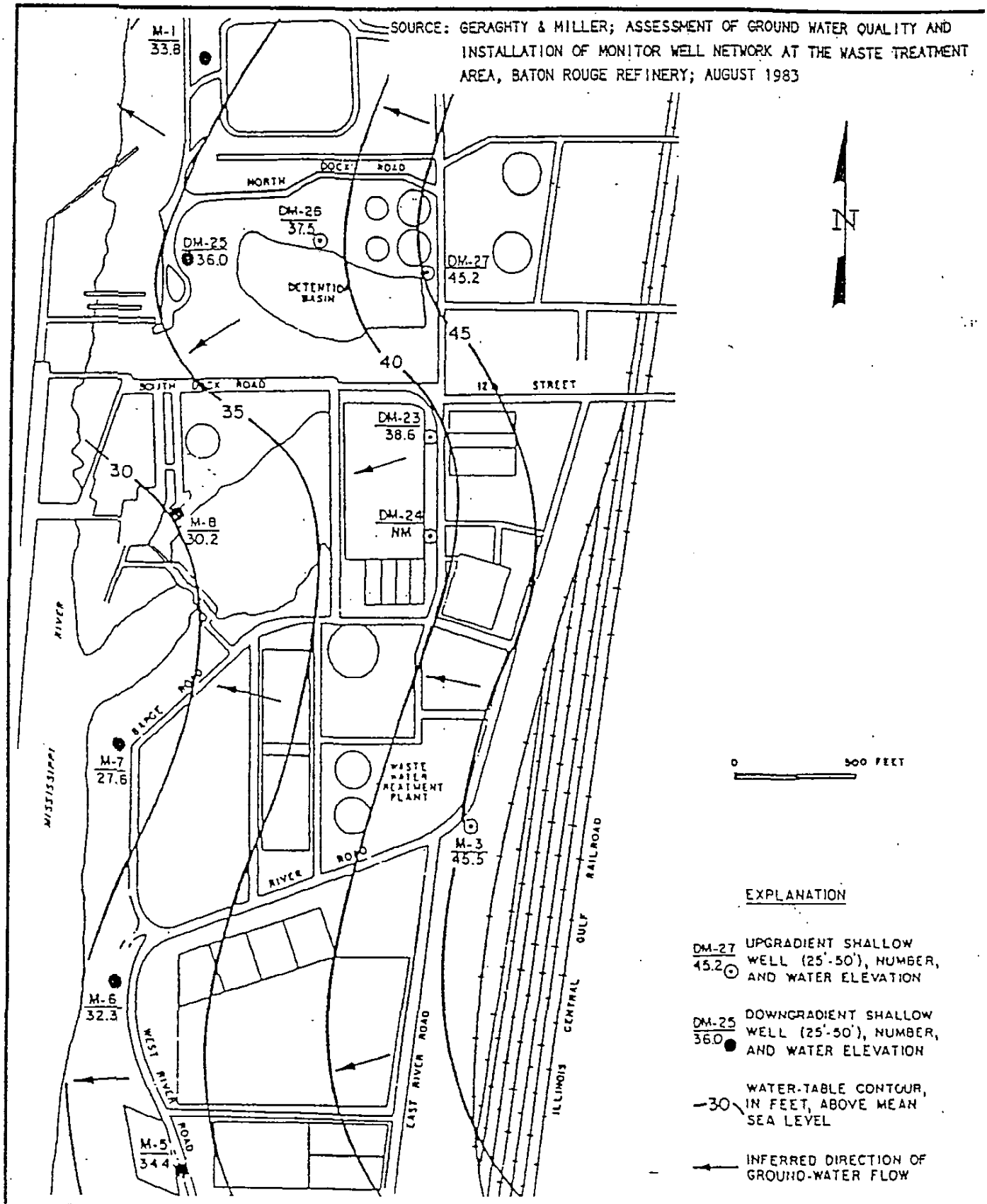
ERM

DATE 12/93 | W.O.NO. 14-134

FIGURE E-3
WATER TABLE SURFACE SHALLOW ZONE
3rd QUARTER, 1982

LAC33:VII.521.E.1.a.iii.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA



ERM-Southwest, Inc.
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DATE 12/93 | W.O.NO. 14-134

FIGURE E-4

WATER TABLE SURFACE SHALLOW ZONE 4th QUARTER, 1982

LAC33:VII.521.E.1.a.iii.

EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA

Figures E-1 through E-4 show the direction of ground water flow to the west, toward the Mississippi River. Hydraulic gradient ranges from 0.01 to 0.02. Using an average hydraulic gradient of 0.015 an average hydraulic conductivity for the monitored zone of 1×10^{-5} cm/sec, and an assumed effective porosity of 15 %, the average ground water flow velocity was calculated to be 0.003 ft/day.

LDEQ Comment:

521.E.1.a.iii *Please provide additional potentiometric data to discern any possible seasonal and temporal fluctuation in the groundwater flow direction beneath the impoundment. Typically, potentiometric data should be collected from the piezometers at least quarterly over a year period.*

The water level of the surface impoundment should be included on and used to develop potentiometric surface maps.

ExxonMobil Response:

Copies of semiannual potentiometric surface maps and ground water monitoring data summary tables (2000 through 2004) have been included in Appendix E of this document.

iv. any change in groundwater flow direction anticipated to result from any facility activities.

No change in ground water flow direction is anticipated as a result of facility activities.

LDEQ Comment:

521.E.1.a.iv *Please note that radial flow if applicable needs to be discussed in the PRA.*

ExxonMobil Response:

Radial flow does not appear to be applicable. See potentiometric surface maps and ground water monitoring data summary tables referenced under the previous comment/response to 521.E.1.a.iii.

b. delineation of the following, from all available information, for all recognized aquifers which have their upper surfaces within 200 feet of the ground surface:

i. areal extent;

ii. thickness and depth to the upper surface;

iii. any interconnection of aquifers; and

iv. direction(s) and rate(s) of groundwater flow shown on potentiometric maps.

With the exception of the uppermost water-bearing zone described in Section E.1.a. and the sandy alluvium directly beneath this zone, no other aquifers are recognized within 200 feet of ground surface. Boring logs indicate that the sandy alluvium consists of sand with gravel, and is first encountered at depths ranging from 100 to 120 feet below land surface. The zone appears to be continuous in a north- south direction beneath the Water Clarification Unit area, but pinches out to the east as shown in cross sections D-5 through D-7. A 1989 report prepared by the USGS in cooperation with the LDOTD (Water Resources Technical Report No. 48) indicated that a confining layer approximately 50 feet in thickness exists between the alluvial aquifer and the "400-foot" sand beneath the site. It is assumed that ground water flow direction in the sandy portion of the alluvium would be similar to flow direction in the uppermost alluvial deposits.

2. The following information on subsurface hydrology is required for Type II landfarms. Delineation of the following information for the water table and all permeable zones from the ground surface to a depth of at least 30 feet below the zone of incorporation:

   a. Aerial extent beneath the facility

      Not applicable. The facility is not a Type II landfarm.

   b. thickness and depth of the permeable zones and fluctuations;

      Not applicable. The facility is not a Type II landfarm.

   c. direction(s) and rate(s) of the groundwater flow based on information obtained from piezometers and shown on potentiometric maps; and

      Not applicable. The facility is not a Type II landfarm.

   d. any change in groundwater flow direction anticipated to result from any facilities activities.

      Not applicable. The facility is not a Type II landfarm.

F. *FACILITY PLANS AND SPECIFICATIONS*

Standards governing facility plans and specifications are contained in LAC 33:VII.711.B (Type I and II landfills), LAC 33:VII.713.B (Type I and II surface impoundments), LAC 33:VII.715.B (Type I and II landfarms), LAC 33:VII.717.E (Type I-A and II-A facilities), LAC 33:VII.721.A (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.A (Type III composting facilities), and LAC 33:VII.725.A (Type III separation facilities). Standards for groundwater monitoring are contained in LAC 33:VII.709.E (Type I and II facilities).

1. Certification

The person who prepared the permit application must provide the following certification:

"I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of the Solid Waste Rules and Regulations. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment."

At the time these impoundments were designed and built, these regulations were not in effect. The impoundments were, however, built using good engineering practices. The solid waste impoundment is currently being maintained to comply with the cited regulations.

Martin West, P.E.
ERM-Southwest, Inc.
Professional Engineer No. 25988

STATE OF LOUISIANA
MARTIN L. WEST
REG. No. 25988
REGISTERED
PROFESSIONAL ENGINEER
IN
ENVIRONMENTAL ENGINEERING

This Application was prepared by ERM-Southwest, Inc., an environmental engineering consulting firm registered in the State of Louisiana.

2. **The following information on plans and specifications is required for Type I and II facilities:**

   a. **a detailed plan-view drawing(s) showing original contours, proposed elevations of the base of units prior to installation of the liner system, and boring locations;**

   Rain Basin 2 was initially designed by consulting engineers and architects, and subsequent design modifications being performed by Professional Engineers, certified in the State of Louisiana. Information has been extracted from the original drawings for the illustrative purposes of this permit application. Engineering drawings of Rain Basin 2 are provided as Drawing No. 3 in Appendix B. Modifications related to the instillation of the two semi-circular rock dikes located near the inlet structures have been added to Drawing No.3.

   This drawing includes dimensions, elevations and other appropriate design information. Engineering calculations related to the features depicted in Drawing No. 3 are also included in Appendix B.

   This permit application was prepared by ERM- Southwest, an environmental engineering consulting firm registered in the State of Louisiana.

   b. ***detailed drawings of slopes, levees, and other pertinent features; and***

   This facility is not protected by levees and a cross-section of the facility is provided in Appendix B, Drawing 3. There is a grassy area maintained by ExxonMobil which provides protective measures.

   c. **the type of material and its source for levee construction. Calculations shall be submitted demonstrating that an adequate volume of material is available for the required levee construction.**

   Not applicable. The permitted facility is existing

3. **The following information on plans and specifications is required for Type I, II *and III landfills:***

   a. Approximate dimensions of daily fill and cover; and

   This information is not applicable since the facility is a surface impoundment.

   b. the type of cover material and its source for daily, interim, and final cover. Calculations shall be submitted demonstrating that an adequate volume of material is available for daily, interim and final cover.

This information is not applicable since the facility is a surface impoundment.

4. **The following information on plans and specifications for the prevention of groundwater contamination must be submitted for Type I and II facilities:**

   a. **representative cross-sections and geologic cross-sections showing original and final grades, approximate dimensions of daily fill and cover, drainage, the water table, groundwater conditions, the location and type of liner, and other pertinent information;**

   A typical cross-section showing original and final grades and other pertinent information including dimensions and water table evaluations at the impoundment is provided as Drawing No. 3 of Appendix B.

   Surface drainage is discussed in Section LAC 33:VII.521.C of this permit application. A description of the ground water condition at the site is presented in Section LAC 33:VII.521.E and geological cross-sections are provided in Section LAC 33:VII.521.D.

   b. **a description of the liner system, which shall include: calculations of anticipated leachate volumes, rationale for particular designs of such systems, and drawings; and**

   RB-2 was constructed in a manner to prevent contamination of ground water (see Appendix B, Drawing No. 3). The facility contains liner as stated below:

Facility	Liner	Estimated Permeability
Rain Basin 2	Natural Clays	$<10^{-6}$ cm/sec

   Logs of soil borings taken from the area around the impoundment may be found in Appendix D. A narrative description of the soils may be found in LAC 33:VII.521.D, Facility Geology. In addition, recent borings and analyses taken around the site are provided in Appendix D.

   Boring logs in the vicinity of RB-2, as shown in Appendix D, indicate that the impoundment is underlain by 5 to 20 feet and approximately 30 feet of silty clays. These natural clays protect the uppermost aquifer from any potential contamination.

c. **a description of the leachate collection and removal system, which shall include calculations of anticipated leachate volumes, rationale for particular designs of such systems, and drawings.**

This requirement is not applicable per LAC 33:VII.713.B.3.a

5. **The following information on plans and specifications for groundwater monitoring must be provided for Type I and II facilities:**

a. a minimum of three piezometers or monitoring wells in the same zone must be provided in order to determine groundwater flow direction;

Four monitoring wells have been installed to monitor the uppermost water-bearing zone in the vicinity of RB-2. Monitoring wells DMS-2, SW-1, and SW-2 are downgradient Rain Basin-2. Monitoring well DMS-1 is upgraident of the impoundment. Potentiometric maps constructed using these and other refinery wells indicate that ground water flow direction is west toward the Mississippi River.

b. for groundwater monitoring wells, cross-sections illustrating construction of wells, a scaled map indicating well locations and the relevant point of compliance, and pertinent data on each well, presented in tabular form, including drilled depth, the depth to which the well is cased, screen interval, slot size, elevations of the top and bottom of the screen, casing size, type of grout, ground surface elevations, etc.;

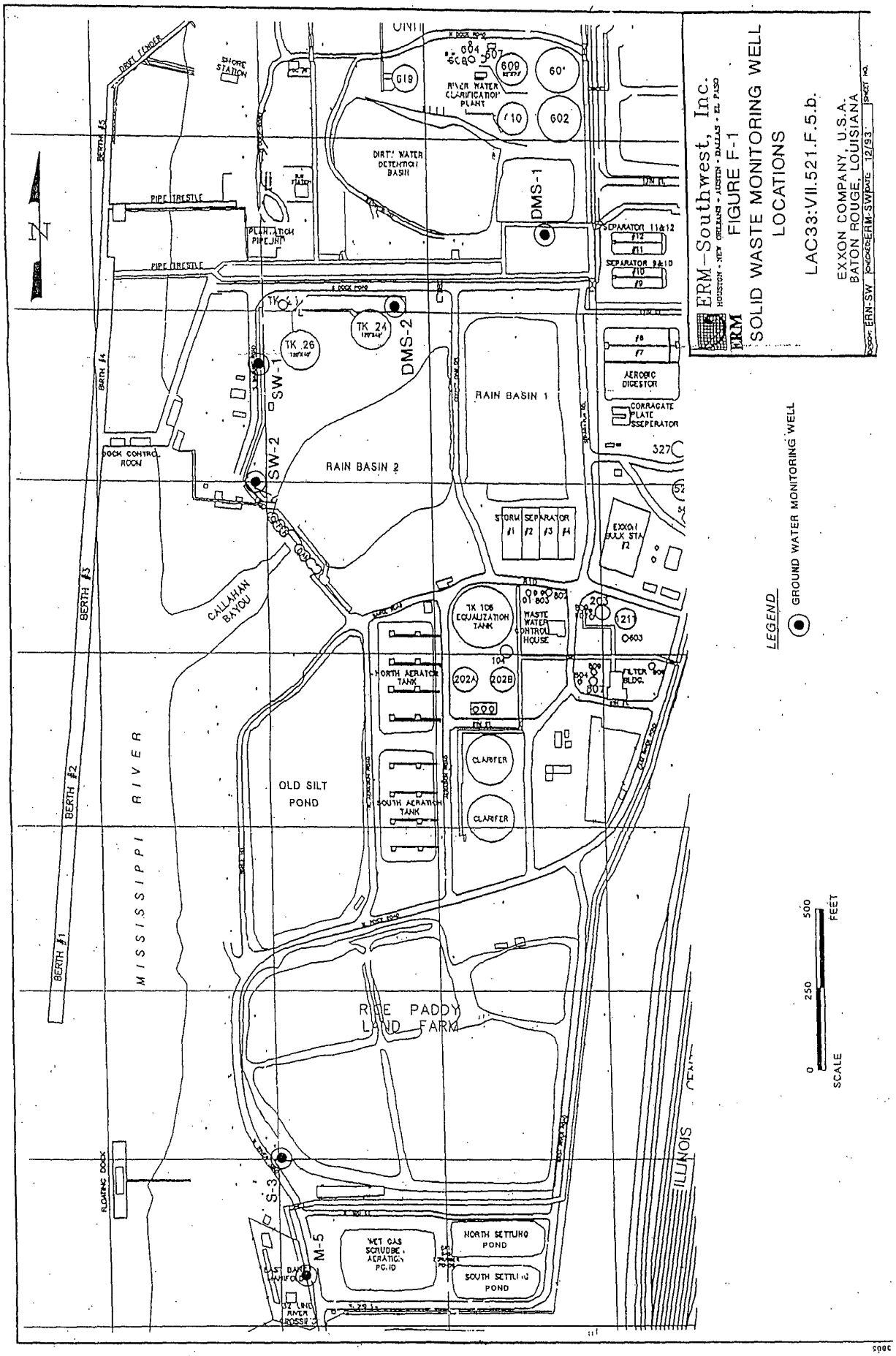
Well construction diagrams for wells DMS-1, DMS-2, SW-1 and SW-2 are provided in Appendix-D. A monitoring well location map is provided as Figure F-1. Table F-1 provides pertinent data for each well, including drilled depth to which the well is cased, screen interval, slot size, elevations of the top and bottom of the screen, casing size and type of grout. Boring logs for each well are provided in Appendix D.

c. **a groundwater monitoring program including a sampling and analysis plan *that includes consistent sampling and analysis procedures that ensure that* monitoring results provide reliable indications of groundwater quality;**

A Ground Water Sampling and Analysis Plan is provided as Appendix N.

LDEQ Comment:

521.F.5.c *You must include justification of the parameters or constituents listed in Table 4-1 of your Sampling and Analysis Plan located in Appendix N. A complete chemical analysis of the sludge in the impoundment should be provided in order to determine the appropriate groundwater monitoring parameters.*


ERM-Southwest, Inc.
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ERM
FIGURE F-1
SOLID WASTE MONITORING WELL LOCATIONS
LAC33:VII.521.F.5.b.
EXXON COMPANY, U.S.A.
BATON ROUGE, LOUISIANA
LEGEND
GROUND WATER MONITORING WELL
SCALE
0
250
500
FEET
N
DMS-1
DMS-2
SW-1
SW-2
S-3
M-5
TK 24
TK 26
TK 108 EQUALIZATION TANK
RAIN BASIN 1
RAIN BASIN 2
OLD SILT POND
RICE PADDY LAND FARM
NORTH SETTLING POND
SOUTH SETTLING POND
WET GAS SCRUBBER AERATION POND
NORTH AERATION TANK
SOUTH AERATION TANK
CLARIFIER
CLARIFIER
AEROBIC DIGESTOR
CORRAGATE PLATE SSEPERATOR
WASTE WATER CONTROL HOUSE
FILTER BLDG.
RIVER WATER CLARIFICATION PLANT
DIRTY WATER DETENTION BASIN
SEPARATOR 11&12
SEPARATOR 9&10
STORM SEPARATOR
DOCK CONTROL ROOM
CALLAHAN BAYOU
MISSISSIPPI RIVER
BERTH #1
BERTH #2
BERTH #3
BERTH #4
BERTH #5
PIPE TRESTLE
PIPE TRESTLE
FLOATING DOCK
ILLINOIS

5830M52

TABLE F-1

MONITORING WELL INFORMATION

Rain Basin 2
Exxon Company, U.S.A. Refinery
Baton Rouge, Louisiana

Parameters/Well Number	DMS-1	DMS-2	SW-1	SW-2
Up or Downgradient:	Up	Down	Down	Down
Unit Monitored:	RB-2	RB-2	RB-2	RB-2
Well Construction:	2" Stainless Steel	2" Stainless Steel	2" Stainless Steel	2" Stainless Steel
Sampling Equipment	Dedicated Pump	Dedicated Pump	Dedicated Pump	Dedicated Pump
Top of Casing Elevation (feet amsl)	48.51	46.67	48.86	42.14
Well Depth (feet below grade)	57.5	52.5	80	59.5
Screened Interval, from ___ feet	+ 1.49	1.67	-23.64	-9.86
to ___ ft. amsl	-11.49	-8.33	-33.64	-19.86
Screen Slot Size (inches)	0.01	0.01	0.01	0.01
Grout Type	Cement/bentonite	Cement/bentonite	Cement/bentonite	Cement/bentonite
Latitude:	30°29'02"	30°29'00"	30°28'58"	30°28'55"
Longitude:	91°11'22"	91°11'27"	91°11'32"	91°11'32"

NOTES:
RB-2 - Rain Basin 2

The Practicable Quantitation Limit (PQL) for all parameters should be lower than or equal to the primary and secondary drinking water standards.

The following deficiencies/comments were noted in the Groundwater Monitoring Plan submitted in Appendix N of the document:

- *The Sampling and Analysis Plan in Appendix N combines groundwater monitoring programs for both Rain Basin No. 2 and the Wet Gas Scrubber Settling Ponds. Given that these solid waste facilities are covered under separate permits, Sampling and Analysis Plans for each must be separate documents.*
- *QA/QC measures such as the use of field blanks and laboratory spikes and blanks must be mentioned in detail in your Sampling and Analysis Plan.*
- *The total depth of each well shall be determined during each sampling event.*
- *All purge water during sampling events shall be disposed of properly.*
- *All groundwater monitoring reports should include scaled potentiometric surface maps showing monitoring well locations and groundwater elevations with respect to mean sea level.*

ExxonMobil Response:

A revised Ground Water Monitoring Plan is provided in Appendix N.

A total of four sludge samples were collected on February 27, 2004 from locations across Rain Basin 2. The samples were submitted to Pace Analytical Laboratory for a full TCLP analysis, i.e., volatile and semi-volatile organics, pesticides, herbicides and metals. The laboratory-reported results support the continued use of the existing constituent list, as contained in Table 4-2 of the Sampling and Analysis Plan. The complete laboratory analytical report is included in Appendix N as Attachment N-2.

d. **for an existing facility, all data on samples taken from monitoring wells in place at the time of the permit application must be included. (If this data exists in the Solid Waste Division records, the administrative authority may allow references to the data in the permit application.) For an existing facility with no wells, groundwater data shall be submitted within 90 days after the installation of monitoring wells. For a new facility, groundwater data (one sampling event) shall be submitted before waste is accepted;**

Ground water monitoring data is submitted to LDEQ Ground Water Protection on a semi-annual basis.

e. a plan for detecting, reporting, and verifying changes in groundwater; and

The ground water monitoring network will be sampled semi-annually (once baseline data is collected) according to the methods described previously in this section. A written report of the analytical results with an interpretation of the data and chain of custody documentation will be submitted to the Administrative Authority semi-annually.

In accordance with the procedures in LAC 33:VII.709.E.3.e. the statistical test chosen for the ExxonMobil monitoring program will initially include tolerance limits. If the percentage of nondetects is greater than fifteen for any parameter, it is likely that a non-parametric analysis of variance will be used. All decisions on applicable statistical methods will follow the *Guidance Document on the Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities-Interim Final Guidance* (EPA/530/SW-89/026), and *A Ground Water Information Tracking System with Statistical Analysis Capability GRITS/STAT* (EPA/625/11-91/002) in determining the most appropriate statistical method for each parameter's dataset.

The method for handling results reported as not detected (ND) for a particular parameter will depend on the distribution of the background data. If all of the results for a particular parameter are reported as ND, than any sample which exceeds the American Chemical Society's limit of quantitation (LOQ) at the 99% confidence level for that parameter would be considered to exceed background. If only part of the data are reported as ND than a value equal to one-half the method detection limit will be substituted when calculating the sample mean and standard deviation.

If subsequent statistical analysis of groundwater data indicates that the selected statistical method is not appropriate, ExxonMobil will use another method identified in LAC 33:VII.709.E.2.e.

f. the method for plugging and abandonment of groundwater monitoring systems.

Groundwater well plugging and abandonment methods will be performed in accordance with the *Water Wells Rules and Regulations, State of Louisiana (LAC 70:XIII)*, as adopted by the Louisiana Department of Transportation and Development, Water Resource Section, at such time as wells are proposed for abandonment. In addition, the methods of abandonment are discussed as follows:

All boreholes will be plugged by tremie-pumping cement bentonite grout from the bottom of the hole up. When wells are proposed for abandonment, the casing and other components of the well including the screen, grout, bentonite seal, filter pack, concrete slab, protective casing, guard posts, and soil in contact with the grout, will be pulled or drilled out, if practical. The borehole will then be grouted in the manner described above. Otherwise, cement bentonite grout will be injected under pressure into the casing and forced through the well screen. Sufficient grout will be added to completely fill the casing to within approximately two feet of the ground surface. The casing will be cut off to the ground surface and the remaining borehole space will be grouted to the ground surface the following day, allowing for settlement of grout placed the preceding day.

A document from a qualified professional stating the casing removal was attempted but could not be completed without detrimental effects to the environment will accompany well abandonment reporting forms. The surface features of the well will be dismantled and disposed of in an environmentally sound manner. Attempts to restore the surface to its original conditions will be made and a notification of the plugging and abandonment will be sent to the LDEQ Solid Waste Division and LDOTD.

6. **The facility plans and specifications for Type I and II landfills and surface impoundments (surface impoundments with on-site closure and a potential to produce gases) must provide a gas collection and treatment or removal system.**

Not applicable

G. *FACILITY ADMINISTRATIVE PROCEDURES*

Standards governing facility administrative procedures are contained in LAC 33:VII.711.C (Type I and II landfills), LAC 33:VII.713.C (Type I and II surface impoundments), LAC 33:VII.715.C (Type I and II landfarms), LAC 33:VII.717.F (Type I-A and II-A facilities), LAC 33:VII.721.B (Type III construction and demolition debris and woodwaste landfills), LAC 33: VII.723.B (Type III composting facilities), and LAC 33:VII.725.B (Type III separation facilities).

1. **The following information on administrative procedures is required for all facilities:**

   a. ***recordkeeping system; types of records to be kept; and the use of records by management to control operations;***

   Records will be maintained during the life of the facility and will be kept on file for at least three years after closure pursuant to LAC 33:VII.713.C.1.b.iii. The following records will be maintained at the Baton Rouge Refinery and these records will be made available for LDEQ officials during facility inspections:

   1. Copies of the current Louisiana Solid Waste Rules and Regulations;
   2. The permit;
   3. The permit application;
   4. Permit modifications;
   5. Certified field notes for construction;
   6. Operator training programs;
   7. Daily log in which Rain Basin 2 notations will be made;
   8. Quality-assurance/quality control records;
   9. Inspections by the permit holder or operator;
   10. Monitoring, testing, or analytical data;
   11. Any other applicable or required data deemed necessary by the administration authority;
   12. Records on ground water sampling results;
   13. Post-closure monitoring reports, if required and;
   14. Copies of all documents received from or submitted to the LDEQ Solid Waste Division;

   The above records will be used by ExxonMobil to account for waste volumes generated, ground water quality, and maintenance on the solid waste facilities. Each of the above items will be used to monitor the operation of the solid waste facilities.

   In accordance with LAC 33:VII.713.C.a.i-v, ExxonMobil will submit an annual report for the Rain Basin 2 discussing the applicable

information listed in this section by August 1 of every year for the reporting period of July1 through June 30. The annual report for the Rain Basin 2 will be provided to LDEQ on a separate annual-reporting form and shall reference the seven-digit industrial waste number that has been assigned to it.

b. an estimate of the minimum personnel, listed by general job classification, required to operate a facility; and

The same refinery personnel operate the solid and hazardous waste management facilities. The training plan developed for the management of hazardous waste is also applicable to solid waste management and is presented in Appendix F. A list of key personnel by general job classification may be found on pages 1 and 2 of the training plan.

c. maximum days of operation per week and per facility operating day (maximum hours of operation within a 24-hour period).

The ExxonMobil Baton Rouge Refinery is operated 24-hours a day, 7 days a week.

2. Administrative procedures for Type II facilities shall include the number of facility operators certified by the Louisiana Solid Waste Operator Certification and Training Program (R.S. 37:3151 et seq.).

Not Applicable. The permitted facility is classified as Type 1.

H. FACILITY OPERATIONAL PLANS

Standards governing facility operational plans are contained in LAC 33: VII.711.D (Type I and II landfills), LAC 33:VII.713.D (Type I and II surface impoundments), LAC 33:VII.715.D (Type I and II landfarms), LAC 33:VII.717.G (Type I-A and II-A facilities), LAC 33:VII.721.C (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.C (Type III composting facilities), and LAC 33:VII.725.C (Type III separation facilities).

1. **The following information on operational plans is required for all facilities:**

   a. **types of waste (including chemical, physical, and biological characteristics of industrial wastes generated on-site), maximum quantities of wastes per year, and sources of waste to be processed or disposed of at the facility;**

      The chemical and physical characteristics of the wastes entering the facilities as well as quantities of waste are provided in Appendix G, Solid Waste Notification Forms. Offsite wastes are not accepted for disposal at the refinery. Although the function of Rain Basin 2 is the collection of storm water, the Facility Operations Plan, Appendix H, includes analytical data from a recent sampling of the rain basin.

   b. **waste handling procedures from entry to final disposition, which could include shipment of recovered materials to a user;**

      During the normal operation of Rain Basin 2, sediment may accumulate on the bottom of the surface impoundment. Periodically this sediment is removed for disposal at permitted, offsite commercial disposal facilities, or recycled on site according to applicable State and Federal regulations. Also, sediment may be recycled at an approved reuse facility such as a cement plant.

      Figure B-5 provides a schematic diagram of the wastewater treatment system at the Baton Rouge Refinery. Rain Basin 2 receives only wet weather flow. As indicated, storm water is diverted into the 24 million gallon Rain Basin 1 during periods of high rainfall. The process sewers are fed to the wastewater treatment facilities throughout the rain. During this time, any contaminants present in the storm water systems are flushed out of the sewers and removed in the storm water diversion facilities (formerly API separators) or contained in the Rain Basin 1. After this first flush, the water is essentially clean storm water run-off. When as much rainfall as possible has been contained in the Rain Basin 1, the storm water flow is diverted to Rain Basin-2. When Rain Basin 2 becomes full, it overflows into the River at NPDES Outfall 003. After the rain, the contaminated rainfall runoff from the Rain Basin 1 is fed through the wastewater treatment system and discharged through Outfall 001.

Wastewater received into these facilities are via flow through piping systems and underground sewers, which preclude the introduction of any other waste types. The refinery has quality assurance/quality control measures in place to ensure that only non-hazardous wastes are placed in these facilities.

c. **minimum equipment to be furnished at the facility;**

Not applicable. This facility is a surface impoundment.

d. **plan to segregate wastes, if applicable;**

Since these wastes are compatible, no plans have been developed to segregate them.

e. **procedures planned in case of breakdowns, inclement weather, and other abnormal conditions (including detailed plans for wet-weather access and operations);**

A description of the flow and rainwater diversion at the Wastewater Treatment Plant-Offsite is contained in Appendix H. The plan describes the wastewater /rainwater diversion system during abnormal conditions and inclement weather.

All machinery involved in plant operation including the wastewater treatment system is periodically inspected and maintained to prevent breakdowns and insure the contaminant of wastes. In the event of an emergency situation, normal operations of the surface impoundments will be shut down and wastewater discharges stopped during clean-up operations.

Operations at the plant continue as usual during most types of inclement weather. Severe weather conditions, such as in hurricanes or other violent storms, may result in the operational shutdown or slowdown of the plant, depending on the location and severity of such weather an the likelihood of direct impact on the plant. Decisions to shutdown or idle the plant in inclement weather are made by facility management.

f. **procedures, equipment, and contingency plans for protecting employees and the general public from accidents, fires, explosions, etc., and provisions for emergency care should an accident occur (including proximity to a hospital, fire and emergency services, and training programs); and**

Procedures for fire protection and emergencies are contained in Appendix C (Fire Fighting Equipment and Supplies) and Appendix I (Contingency plan and Emergency Procedures).

The ExxonMobil Baton Refinery has an Emergency Organizational Manual to deal with most types of emergencies and accidents. In addition, a Contingency Plan specific to the waste treatment area was developed to address the requirements of the Louisiana Hazardous Waste Regulations and is also applicable to the solid waste facilities. A copy of this plan is provided in Appendix I.

The local fire and police departments as well as both area hospitals (i.e. Baton Rouge General Medical Center and Our Lady of the Lake Regional Medical Center) have been supplied with a copy of the contingency plan. These centers have also been provided information concerning the wastes handled and the overall refinery process. The personnel training manual may be found in Appendix F. Primary emergency care is provided onsite by trained company personnel. Ambulances are maintained onsite for quick transport to the nearest hospital, located approximately five miles from the Refinery. The Refinery has it's own fire department located within the refinery. The Refinery Fire Department is located approximately one mile from the Rain Basin 2. ExxonMobil is also a member of the Baton Rouge Area Mutual Aid System (BRAMAS).

g. **provisions for controlling vectors, dust, litter, and odors.**

Since Rain Basin 2 is a surface impoundment, which handles non-putrescible wastes, provisions for litter control or vector control are not applicable. The physical nature of the solid waste contained in Rain Basin 2 is such that the waste will not become airborne trash. The refinery does, however, have a policy dealing with general plant housekeeping.

2. **The following information on operational plans is required for Type I and Type II facilities:**

a. **a comprehensive operational plan describing the total operation, including (but not limited to) inspection of incoming waste to ensure that only permitted wastes are accepted (Type II landfills must provide a plan for random inspection of incoming waste loads to ensure that hazardous wastes or regulated PCB wastes are not disposed of in the facility.); traffic control; support facilities; equipment operation; personnel involvement; and day-to-day activities. A quality-assurance/ quality-control (QA/QC) plan shall be provided for facilities receiving industrial waste; domestic-sewage sludge; incinerator ash; friable asbestos; nonhazardous petroleum-contaminated media; and debris generated from underground storage tanks [UST], corrective action, or other special wastes as determined by the administrative authority. The QA/QC plan shall include (but shall not be limited to) the necessary methodologies; analytical personnel; preacceptance and delivery restrictions; and appropriate responsibilities of the generator, transporter, processor, and disposer. The QA/QC plan shall ensure that only permitted, nonhazardous wastes are accepted;**

A Facilities Operational Plan is provided as Appendix H. Quality Assurance Quality Control measures ensure that only non-hazardous wastes are introduced to Rain Basin 2. The impoundment is operated as a component of the facility wastewater and storm water management systems under an approved NPDES permit. Operational procedures are in place as part of the operation of the water clarification unit to ensure that only storm waters are introduced into the Rain Basin 2 and no hazardous waste is managed by the facility. Wastewaters are piped in a flow-through manner precluding the introduction of any uncontrolled waste streams. Operation of the facility is supervised by the water clarification unit operator. The operator periodically inspects and documents the operation of the impoundment. Since flows are limited to a known waste stream, which is contained and controlled, annual TCLP testing of wastewaters is not required. Additionally, no open burning operations are conducted within Rain Basin 2.

The facilities are examined daily and after storms to detect evidence of deterioration of the banks, overtopping, malfunction or improper operation. In addition, formal solid waste inspections are performed weekly and are documented on the attached form provided as Figure H-1. If an inspection reveals a leak in the impoundment and it is then confirmed by on-site environmental professionals, the Solid Waste Division will be notified as required by the solid waste regulations.

b. salvaging procedures and control, if applicable; and

Not applicable. Materials are not salvaged from the solid waste facilities.

c. scavenging control.

Not applicable. Materials are not scavenged for the solid waste facilities.

3. The following information on operational plans is required for Type I and Type II landfarms:

Not applicable. The facility is a surface impoundment

a. items to be submitted regardless of land use:

i. A detailed analysis of waste, including (but not limited to) pH, phosphorous, nitrogen, potassium, sodium, calcium, magnesium, sodium-adsorption ratio, and total metals (as listed in LAC 33.VII.715.D.3.b);

Not applicable. This facility is a surface impoundment.

ii. soil classification, cation-exchange capacity, organic matter, content in soil, soil pH, nitrogen, phosphorous, metals (as listed in LAC 33:VII.715.D.3.b), salts, sodium, calcium, magnesium, sodium-adsorption ration, and PCB concentrations of the treatment zone;

Water Clarification Unit Inspection Report

Inspection Type:	Weekly		*Post Storm		Date:	
Note: Units are required to be inspected during turnarounds and downtimes.					Time:	

*Post storm inspections required when rainfall exceeds 2" in a 24-hour period. In the event of a post storm inspection, answer only the (*) questions.

Biological Oxidation Ponds (BIOX Ponds)		Yes	No (explain below)
Operational Status (Are they in service?)	North		
	South		
Can changes in liquid level be explained?	North		
	South		
*Is there a minimum of 2' of freeboard?	North		
	South		
*Dikes and surrounding soils free of any severe erosion or deterioration?			
Are warning signs visible? (Danger, Unauthorized Personnel Keep Out)			
Is the appropriate fire fighting and safety equipment in working order: fire hydrants and extinguishers?			
Are roadways unobstructed?			
*Are pumps, mixers and associated operating equipment in working order?			
Are all steam, water or hydrocarbon lines in immediate area free of leaks?			
Is the sampling pump in working order?			

***Explain any checks in the "No" column and what corrective action was taken:**

Rain Basins	*What is the level?	
	Yes	No (explain below)
Can changes in level be explained?		
*Is there a minimum of 2' of freeboard?		
*Are the sides of the coffer dam free of leaks or erosion?		
Are roadways unobstructed?		
Are warning signs visible: (Danger - Unauthorized Personnel Keep Out)		
*Are pumps and level indicators in operating condition?		
Is the appropriate fire fighting and safety equipment in working condition? Fire hydrants, extinguishers, warning signs, chains and fences		
Are all sluice gates operating properly? Limit switches operating? Motors Ok?		
Are all steam, water or hydrocarbon lines in immediate area free of leaks?		

***Explain any checks in the "No" column and what corrective action was taken:**

Print Name:

Signature:

Date:

Water Clarification Unit Inspection Report

Inspection Type:	Weekly		*Post Storm		Date:	
Note: Units are required to be inspected during turnarounds and downtimes.					Time:	

*Post storm inspections required when rainfall exceeds 2" in a 24-hour period. In the event of a post storm inspection, answer only the (*) questions.

Wet Gas Scrubber Setting Ponds		Yes	No (explain below)
Operational Status (Are they in service?)	North		
	South		
Can changes in liquid level be explained?	North		
	South		
*Is there a minimum of 2' of freeboard?	North		
	South		
Area free of leaks around the impoundments, in the adjoining ditch, or west of the river crossing manifold along the batture?			
*Dikes and surrounding soils free of any severe erosion or deterioration?			
Are roadways unobstructed?			
*Are pumps and associated operating equipment in working order?			
Are all steam, water or hydrocarbon lines in immediate area free of leaks?			

***Explain any checks in the "No" column and what corrective action was taken:**

Rain Basin 2	*What is the level?	
	Yes	No (explain below)
Can changes in level be explained?		
*Are the sides of the coffer dam free of leaks or erosion?		
*Are pumps and associated operating equipment in working order?		
*Is there a minimum of 7' 5" of freeboard? (7.5" of freeboard exists unless river backs up into the impoundment)		
Are all steam, water or hydrocarbon lines in immediate area free of leaks?		

***Explain any checks in the "No" column and what corrective action was taken:**

Print Name:

Signature:

Date:

iii. annual application rate (dry tons per acre) and weekly hydraulic loading (inches per acre); and

Not applicable. This facility is a surface impoundment.

iv. an evaluation of the potential for nitrogen to enter the groundwater.

Not applicable. This facility is a surface impoundment.

b. items to be submitted in order for landfarms to be used for flood-chain cropland:

i. a description of the pathogen-reduction method for septage, domestic sewage sludges, and other sludges subject to pathogen production;

Not applicable. This facility is a surface impoundment.

ii. crops to be grown and the dates for planting;

Not applicable. This facility is a surface impoundment.

iii. PCB concentrations

Not applicable. This facility is a surface impoundment.

iv. Annual application rates of cadmium and PCB's and

Not applicable. This facility is a surface impoundment.

v. Cumulative applications of cadmium and PCB's

Not applicable. This facility is a surface impoundment.

c. items to be submitted for landfarms to be used for nonfood-chain purposes:

Not applicable. This facility is a surface impoundment.

i. description of the pathogen-reduction method in septage, domestic sewage sludges, and other sludges subject to pathogen production; and

Not applicable. This facility is a surface impoundment.

ii. description of control of public and livestock access.

Not applicable. This facility is a surface impoundment.

LDEQ Comment:

Please provide qualifications and certifications that the Baton Rouge Area Mutual Aid System (BRAMAS) can meet the standards set forth in LaR.S.30:2157.D.

ExxonMobil's Response:

The charter for BRAMAS organizations is "to develop, maintain and improve procedures among the members for mutual assistance and cooperation in the control of emergencies and disasters suck as fires, spills, explosions, and releases of toxic substances." Response personnel and BRAMAS members are some of the most highly trained professionals in the Baton Rouge area, such as our current Baton Rouge Police Department Chief. The Baton Rouge Fire Chief, Assistant Chief, and other officers receive training in the many aspects of hazardous materials response. "All nine (9) of the officers, along with the Fire Chief and Assistant Fire Chief of the division are certified by the Louisiana Fire Fighter Certification Program as Hazardous Materials Technicians which meets or exceeds NFPA standards" (http://brgov.com/dept/Fire/hazardous.htm).

4. **The following information on operational plans is required for Type I-A and II-A incinerator waste-handling facilities and refuse-derived energy facilities:**

   a. **a description of the method used to handle process waters and other water discharges which are subject to NPDES permit and state water discharge permit requirements and regulations; and**

   b. **a plan for the disposal and periodic testing of ash (all ash and residue must be disposed of in a permitted facility).**

      Not Applicable. The Rain Basin 2 is not a Type I-A or II-A incinerator waste handling facility.

5. **The following information on operational plans is required for Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities:**

   a. **a description of the testing to be performed on the fuel or compost; and**

   b. **a description of the uses for and the types of fuel/compost to be produced.**

      Not Applicable. The Rain Basin 2 is not a Type I-A or II-A refuse-derived fuel facility or a Type III separation and composting facility.

6. **The operational plans for Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities must include a description of marketing procedures and control.**

   Not Applicable. The Rain Basin 2 is not a Type I-A or II-A refuse-derived fuel facility or a Type III separation and composting facility.

7. **The operational plans for Type I and II facilities receiving waste with a potential to produce gases must include a comprehensive air monitoring plan.**

   Not Applicable. The Rain Basin 2 does not receive waste with a potential to produce gases.

I. IMPLEMENTATION PLAN

Standards governing implementation plans are contained in LAC 33:VII.709.D (Type I and II facilities), LAC 33:VII.717.H (Type I-A and II-A facilities), and LAC 33:VII.719.E (Type III facilities).

1. The implementation plans for all facilities must include the following:

a. a construction schedule for existing facilities, which shall include beginning, and ending time frames and time frames for the installation of all major features such as monitoring wells and liners. (Time-frames must be specified in days, with day one being the date of standard permit issuance); and

Construction of the rock dikes within Rain Basin 2 is to commence in 2005.

b. details on phased implementation if any proposed facility is to be constructed in phases.

Not applicable. See LAC 33:VII.521.I.1.a above

2. The implementation plans for Type I and II facilities must include a plan for closing and upgrading existing operating areas if the application is for expansion of a facility or construction of a replacement facility.

Not applicable. This application is not for an expansion of a facility or construction of a replacement facility.

J. *FACILITY CLOSURE*

Standards governing facility closure are contained in LAC 33:VII.711.E (Type I and II landfills), LAC 33:VII.713.E (Type I and II surface impoundments), LAC 33:VII.715.E (Type I and II landfarms), LAC 33:VII.717.I (Type I-A and II-A facilities), LAC 33:VII.721.D (construction and demolition debris and woodwaste landfills), LAC 33:VII.723.D (Type III composting facilities), and LAC 33:VII.725.D (Type III separation facilities).

1. **The closure plan for all facilities must include the following:**

   a. **the date of final closure;**

      The estimated date of final closure is the year 2024.

   b. **the method to be used and steps necessary for closing the facility; and**

      The methodology to close the facility is contained in Section 1.3 of Appendix J.

   c. **the estimated cost of closure of the facility, based on the cost of hiring a third party to close the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive.**

      Closure costs for Rain Basin-2 are provided in Table 2 of Appendix J. Since all solid waste will be removed from the surface impoundment at closure, post-closure care is not required.

2. **The closure plan for Type I and II landfills and surface impoundments must include:**

   a. **a description of the final cover and the methods and procedures used to install the cover;**

      A final cover will not be installed because ExxonMobil intends to remove all sludge and contaminated soils and achieve clean closure.

   b. **an estimate of the largest area of the facility ever requiring a final cover at any time during the active life;**

      Not applicable. See LAC 33:VII.J.2.a

   c. **an estimate of the maximum inventory of solid waste ever on-site over the active life of the facility; and**

      An estimate of the maximum inventory of solid waste ever on-site over the active life of the facility is provided in Table 1 of Appendix J.

d. a schedule for completing all activities necessary for closure.

A schedule of closure for the facilities is provided in Section 1.4 of Appendix J.

3. The closure plan for all Type I and II facilities and Type III woodwaste and construction/demolition debris facilities shall include the following:

a. the sequence of final closure of each unit of the facility, as applicable:

The methodology to close the facilities is contained in Section 1.3 of Appendix J.

b. a drawing showing final contours of the facility; and

Final contours of the facility will be approximately the same as the existing contours shown on Figure 3 of Appendix B.

c. a copy of the document that will be filed upon closure of the facility with the official parish recordkeeper indicating the location and use of the property for solid waste disposal, unless the closure specified a clean closure.

A copy of the applicable closure documents, if required, will be filed with the East Baton Rouge Parish Recordkeeper upon closure of the facility.

This document is required to be submitted upon final closure of a landfill facility. This facility is a surface impoundment and will undergo clean closure in the year 2024; therefore this form is not applicable.

K. *FACILITY POST-CLOSURE*

Standards governing post-closure requirements are contained in LAC 33:VII.711.F (Type I and II landfills), LAC 33: VII.713.F (Type I and II surface impoundments), LAC 33:VII.715.F (Type I and II landfarms), and LAC 33:VII.721.E (Type III construction and demolition debris and woodwaste landfills).

1. **The post-closure plan for all facilities must include the following:**

   a. **specification of the long-term use of the facility after closure, as anticipated; and**

      Long-term use of the site after clean closure is anticipated to be in accordance with the industrial setting of the refinery.

   b. **the cost of conducting post closure of the facility, based on the estimated cost of hiring a third-party to conduct post-closure activities in accordance with the closure plan.**

      Since all solid waste will be removed from the surface impoundments at closure, post-closure care will not be required.

2. **The post-closure plan for Type I and II facilities must include the following:**

   a. **the method for conducting post-closure activities, including a description of the monitoring and maintenance activities and the frequency at which they will be performed;**

      At closure, it is anticipated that all solid waste will be removed from the impoundments. No monitoring procedures are required in accordance with LAC 33:VII.713.E.3.b.

   b. **the method for abandonment of monitoring systems, leachate collection systems, gas-collection systems, etc.;**

      In the event that groundwater monitoring wells must be abandoned, they will be plugged using the most up-to date techniques. Current practices for well abandonment are found in the response to LAC 33;VII.709.F.5.f. Prior to abandonment of any monitoring well, approval, will be obtained form the Administrative Authority.

c. ***measures planned to ensure public safety, including access control and gas control; and***

Perimeter barriers will be maintained after closure to assure public safety and access control. Since it is planned to remove all waste from the facilities, the risk to public safety is minimal. Gas controls are not applicable, since all wastes are non-putrescible.

d. **a description of the planned uses of the facility during the post-closure period.**

At this time, it is anticipated that ExxonMobil will continue as owner of the site after closure. Should this status change ExxonMobil will notify the Secretary if the LDEQ in accordance with these regulations.

L. *FINANCIAL RESPONSIBILITY*

Standards governing financial responsibility are contained in LAC 33:VII.727. A section documenting financial responsibility according to LAC 33:VII.727 which contains the following information, must be included for all facilities:

1. **the name and address of the person who currently owns the land and the name and address of the person who will own the land if the standard permit is granted (if different from the permit holder, provide a copy of the lease or document which evidences the permit holder's authority to occupy the property); or**

   The Baton Rouge Refinery is wholly owned by the ExxonMobil Corporation, U.S.A., whose stock is widely held and publicly traded.

2. **the name of the agency or other public body that is requesting the standard permit; or, if the agency is a public corporation, its published annual report; or, if otherwise, the names of the principal owners, stockholders, general partners, or officers;**

   The most recent published annual report for ExxonMobil Corporation is provided as Appendix K.

2. **evidence of liability coverage, including:**

   a. ***personal injury, employees, and the public* (coverage, carriers, and any exclusions or limitations);**

      Documentation of financial assurance for the liability coverage, closure and post-closure care of the refinery's solid waste facilities is provided in Appendix L.

   b. **property damage (coverage and carrier);**

      See 33:VII.521.L.3.a

   c. **environmental risks; and**

      See 33:VII.521.L.3.a

4. **evidence of a financial assurance mechanism for closure and/or post-closure care and corrective action for known releases when needed.**

   Documentation of financial assurance for the reliability coverage, closure and post-closure care of the refinery's solid waste facilities is provided in Appendix L.

M. SPECIAL REQUIREMENTS

The administrative authority may require additional information for special processes or systems and for supplementary environmental analysis.

No other additional information has been requested at this time.

Additional Supplementary Information

Part III

July 2004

W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

LAC 33:VII.523PART III: ADDITIONAL SUPPLEMENTARY INFORMATION

The following supplementary information is requested for all solid waste processing and disposal facilities. All responses and exhibits must be identified in the following sequence to facilitate the evaluation:

A. a discussion demonstrating that the potential and real adverse environmental effects of the facility have been avoided to the maximum extent possible;

In developing ExxonMobil's Baton Rouge Refinery, care and consideration was and is given to the preservation and protection of surrounding swamps, marshes, floodplains, estuaries, wildlife hatcheries, habitats of endangered species and historical sites. However, there are no known historical, or archeological areas (as registered by the Louisiana Department of Culture, Recreation and Tourism) within 1000 feet of the waste disposal sites. No designated wildlife areas have been established in the vicinity of the sites, and there is no apparent unique habitat for listed endangered species. No natural swamps or marshes occur within or immediately adjacent to the site. The battture area along the Mississippi can be periodically flooded but does not support significant populations of marsh plant species in the refinery vicinity.

ExxonMobil has taken measures specifically designed to protect the environment and monitor any effects the refinery has on the environment. A ground water monitoring plan, as described in Section 521.F.5 of this application, has been implemented to detect any possible contamination at the earliest point. Process waters and contaminated storm waters are treated at the water clarification unit prior to discharge through NPDES outfalls (Appendix H contains a description of the wastewater treatment procedures). Wastewater streams containing volatile hydrocarbons are segregated and treated in a covered corrugated plat separator to minimize air emissions. A wastewater benzene removal program is in place to comply with benzene waste operations National Emission & Standard for Hazardous Air Pollutants. The refinery also has an air-monitoring program in place.

ExxonMobil has a contingency and emergency procedure plan to address and minimize any hazards to the environment from fire, explosions, or any release of wastes to the air, soil, or surface waters. The plan is presented in Appendix I of the permit application.

B. a cost-benefit analysis demonstrating that the social and economic benefits of the facility outweigh the environmental-impact costs;

Cost analysis of the alternative treatment, storage and disposal techniques demonstrate that the social and economic benefits of the present waste management facilities exceed the environmental impacts.

Specifically, ExxonMobil has considered the possibility of replacing the surface impoundment with tanks. However, tanks and associated equipment to manage stormwater would not only be costly to build, but there is no available real estate to place the tanks required. Maintenance time and costs would also increase. In addition, Rain Basin 2 has proven reliable and effective.

In assessing the social and economic benefits, ExxonMobil has taken into consideration the effects that any alternatives would have on employees, the revenue supplied to surrounding areas, and the company's bottom line profit. It is ExxonMobil's intent to reduce to the extent possible any environmental impacts to the air, land, or water within the refinery and the surrounding area.

C. **a discussion and description of possible alternative sites that would offer more protection to the environment without unduly curtailing non-environmental benefits; and**

ExxonMobil has considered the technical and economic feasibility of selected alternatives for treating, storing and disposing of refinery solid wastes. It is felt that Rain Basin 2 presently provides adequate environmental protection while remaining economically feasible. Storage tanks to replace the impoundments would be costly in terms of both land and money and engineering, an alternative would be logistically very difficult if at all possible.

D. **a discussion of possible alternative sites that would offer more protection to the environment without unduly curtailing non-environmental benefits; and**

Rain Basin 2 has been in existence since the early 1970s and it is felt that the current location of the facility is situated so as to provide adequate protection to the environment. The site is not located in a seismic area. Rain Basin 2 is located more than 1000 feet from any environmentally sensitive areas (i.e., swamps, marshes, estuaries, wildlife hatcheries, habitants of endangered species and historical sites). Plant site facilities are separated and shielded from adjoining non-compatible land uses by a buffer zone of approximately 200 feet of space or more surrounding the site.

E. **a discussion and description of the mitigating measures, which would offer more protection to the environment than the facility, as proposed, without unduly curtailing non-environmental benefits.**

As previously stated, ExxonMobil's waste management facilities are existing and have been designed and operated to minimize hazards to human health and the environment. In addition, the current ground water monitoring system will be located as to intercept any potential contamination at the earliest practical occurrence. Personnel training and contingency plans have been developed to address emergency situations. As discussed in Section 523.A above, physical barriers aid in protecting the environment.

Seismic Maps

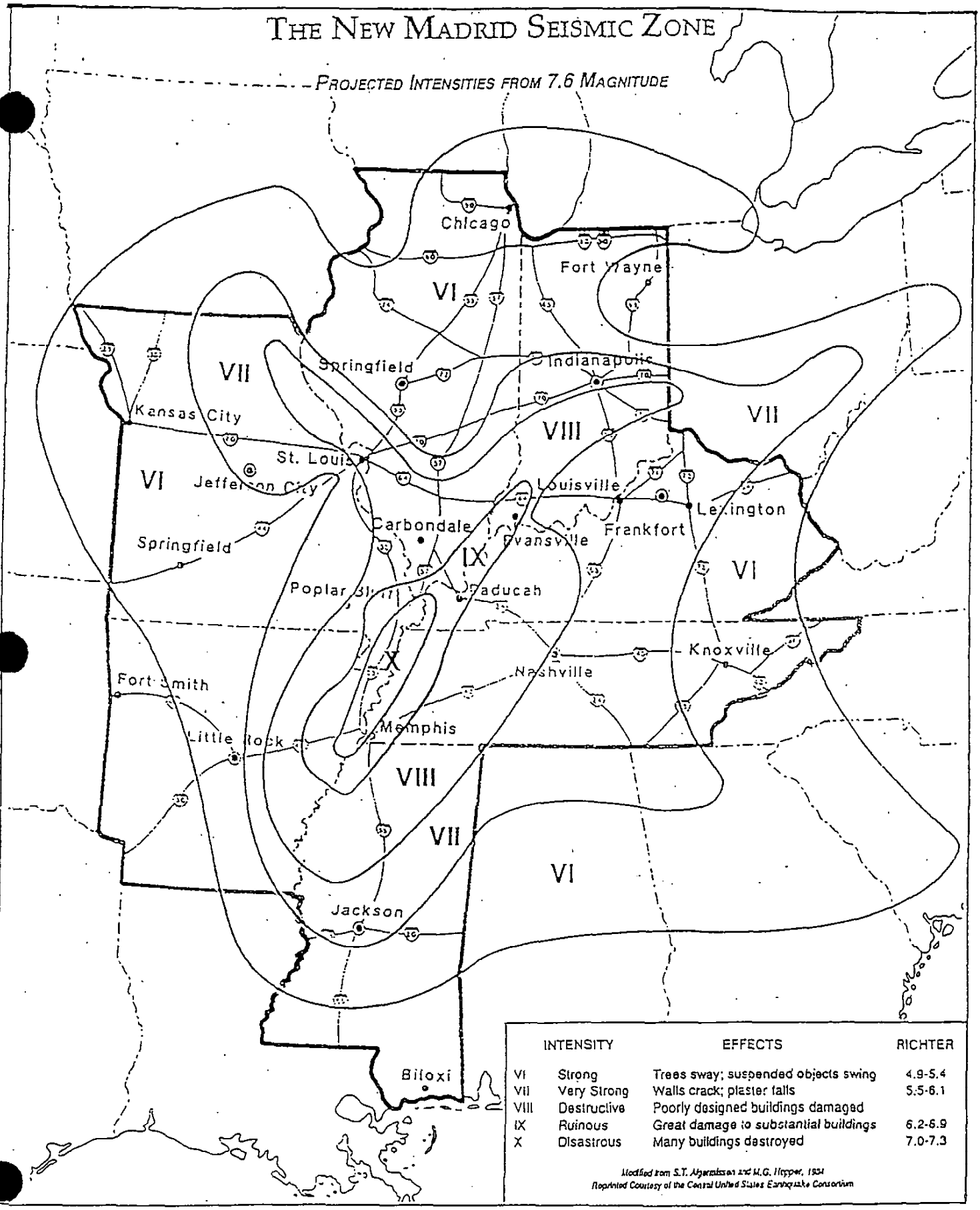
Appendix A

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

THE NEW MADRID SEISMIC ZONE

PROJECTED INTENSITIES FROM 7.6 MAGNITUDE

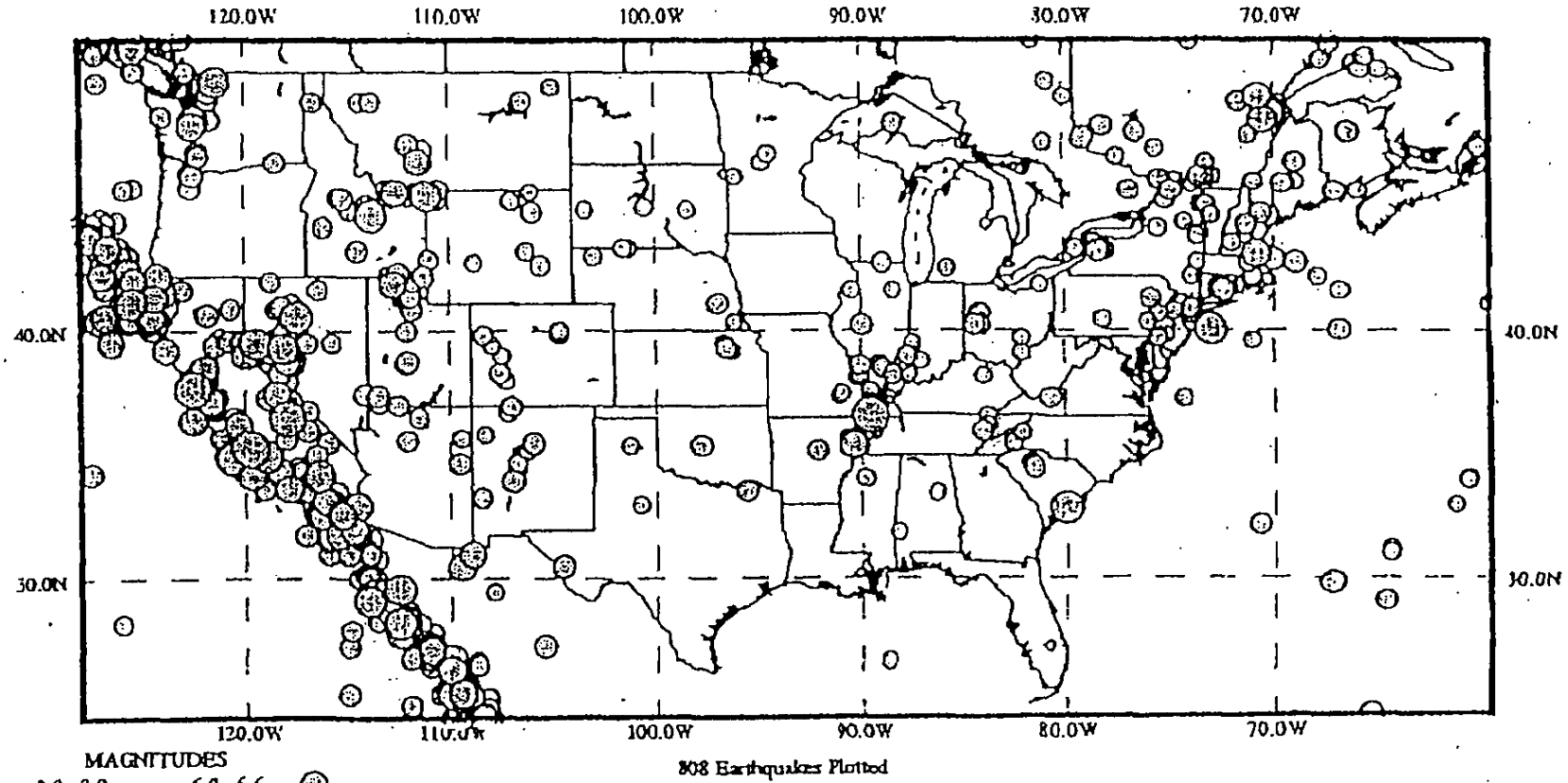


INTENSITY		EFFECTS	RICHTER
VI	Strong	Trees sway; suspended objects swing	4.9-5.4
VII	Very Strong	Walls crack; plaster falls	5.5-6.1
VIII	Destructive	Poorly designed buildings damaged	
IX	Ruinous	Great damage to substantial buildings	6.2-6.9
X	Disastrous	Many buildings destroyed	7.0-7.3

Modified from S.T. Algermissen and M.G. Hopper, 1984
Reprinted Courtesy of the Central United States Earthquake Consortium

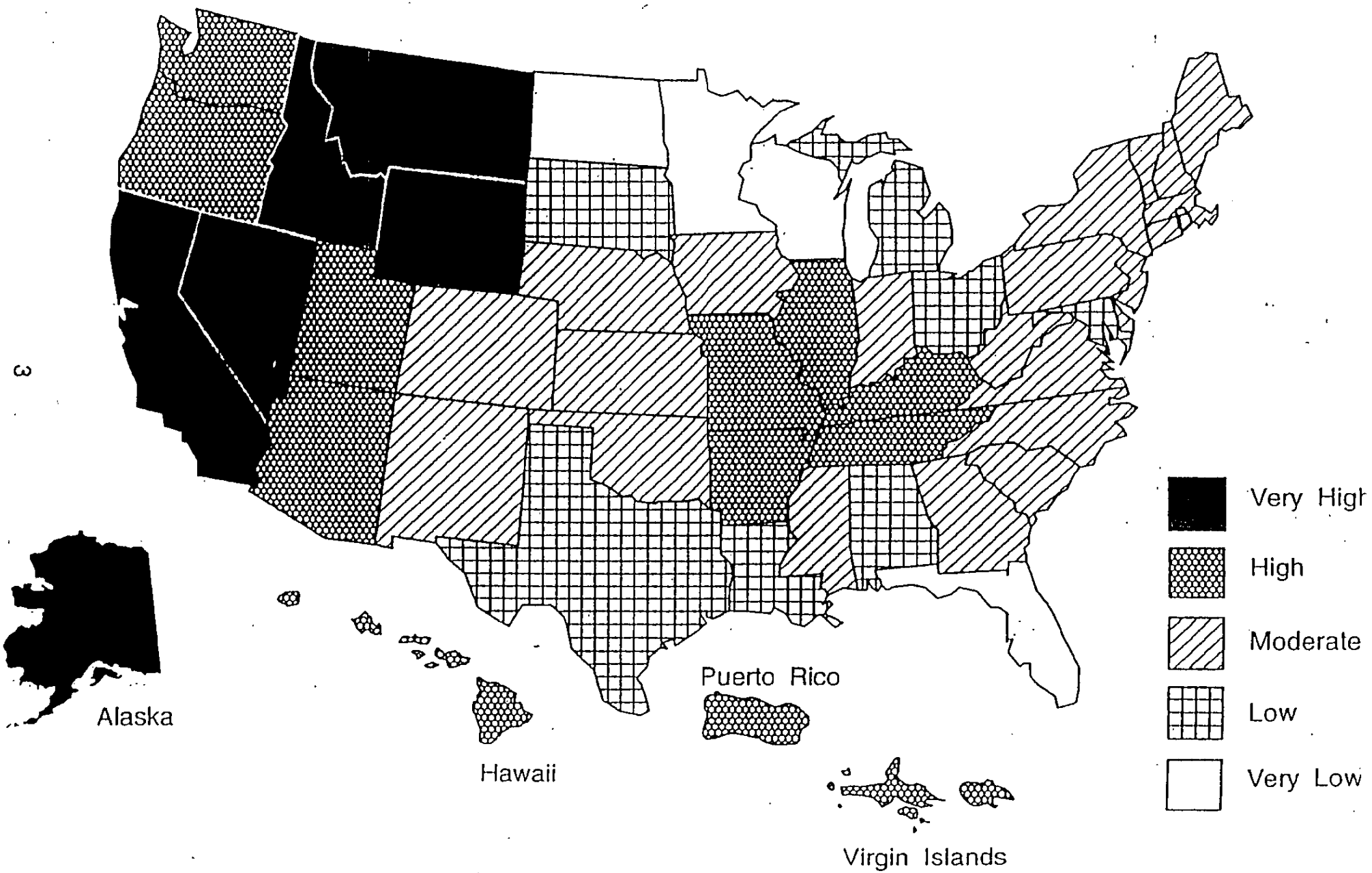
CENTRAL UNITED STATES EARTHQUAKE CONSORTIUM
2630 Holmes Road, East
Memphis, TN 38118

SEISMICITY OF THE UNITED STATES 1500 TO MAY 1993 BY EARTHQUAKE MAGNITUDE



NATIONAL GEOPHYSICAL DATA CENTER / NOAA BOULDER, CO, 80303

Seismic Hazard of the United States



Surface Impoundments Drawings

Appendix B

July 2004
W.O. #0016262

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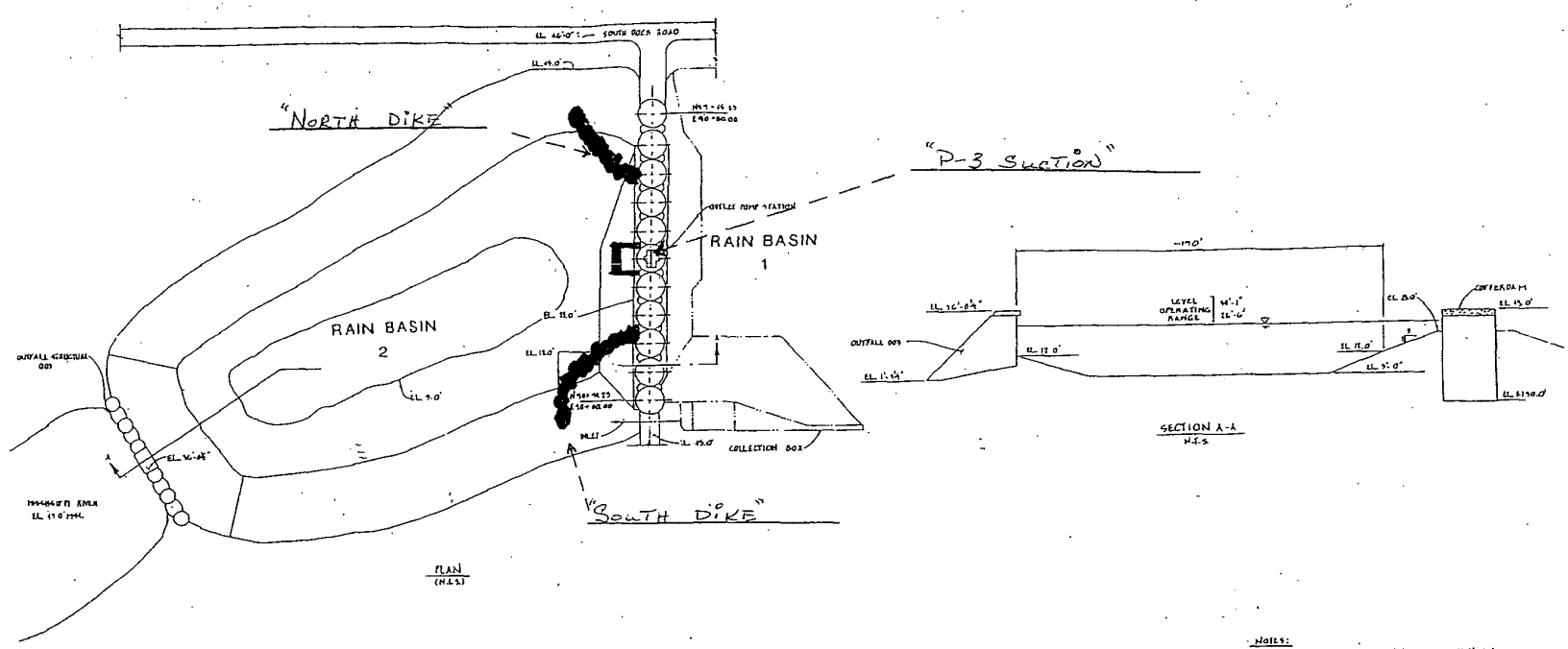
Drawing No. 3



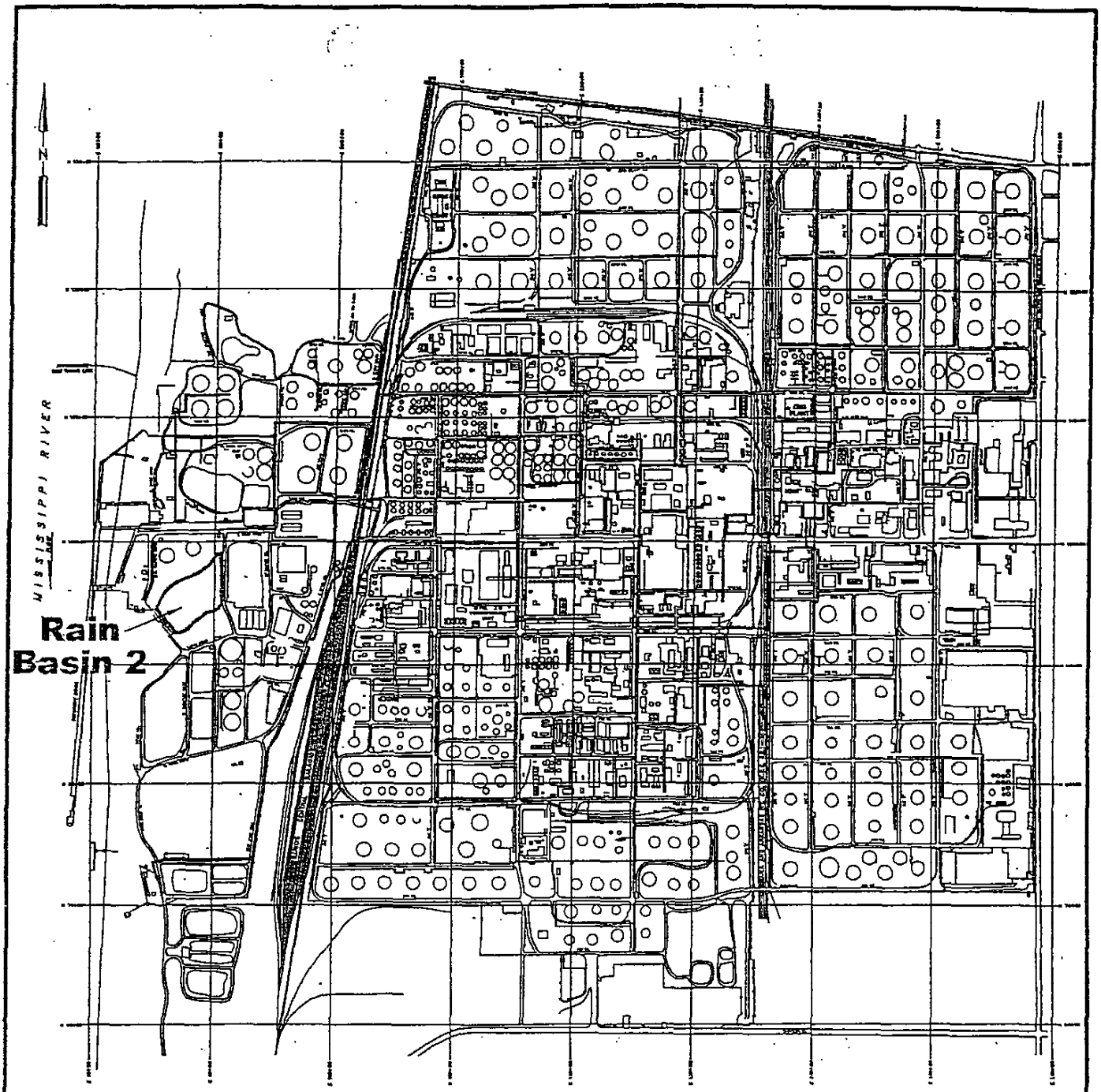
NOTES:
1. MISSISSIPPI RIVER HIGH WATER LEVEL IS 45.0' MSL.
2. EFFLUENT FROM CMS OVERFLOWS INTO RIVER AT OUTFALL 003 OR CAN BE PUMPED TO WWTP.

ERM-Southwest, Inc.
HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • EL PASO

DRAWING NO. 3

PLAN VIEW AND CROSS-SECTION
RAIN BASIN 2

EXXON COMPANY, U.S.A. REFINERY
BATON ROUGE, LOUISIANA



BASEMAP SOURCE: ExxonMobil Map System S001, AGS#S001AA Revision, 07/28/93.

ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · MOBILE · BEAUMONT · BATON ROUGE · CORPUS CHRISTI

DESIGN: AG	DRAWN: MMH	CHKD.: AG
DATE: 03/2003	SCALE: AS SHOWN	REV.: 10/28/03
W.O.NO.: 014723A218 C03		

FIGURE 1
FACILITY MAP

ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

ERM.

Exxon Mobil Refining
Rain Basin 2 Flow Improvement Mod.
Baton Rouge, LA

Volume Calculations
South Inlet Rock Dikes
1 Rise: 1.5 Run

JEG Proj. No.: 07-AQ65-01
Engineer: Don Watson
Date: 04/14/2003

Volume excludes two (2') feet of additional consolidation settlement material per Soil Testing Report STE File 01-1240.

DEQ Rock Volume for Single South Rock Dike @ Radius 105'

Section	depth = h (ft)	Position (ft)
1	0.50	0.00
2	0.50	20.00
3	1.00	20.00
4	3.00	20.00
5	4.00	20.00
6	4.00	20.00
7	4.00	20.00
8	3.00	20.00
9	2.00	20.00
10	0.00	20.00
11	-8.50	40.00

X Section Eqn $A_1 = 1.5h^2 + 35.5h + 17.375$ ft^2

A_1 =	35.50		
A_2 =	35.50	Vol_{1-2} =	710
A_3 =	54.38	Vol_{2-3} =	899
A_4 =	137.38	Vol_{3-4} =	1918
A_5 =	183.38	Vol_{4-5} =	3208
A_6 =	183.38	Vol_{5-6} =	3668
A_7 =	183.38	Vol_{6-7} =	3668
A_8 =	137.38	Vol_{7-8} =	3208
A_9 =	94.38	Vol_{8-9} =	2318
A_{10} =	17.38	Vol_{9-10} =	1118
A_{11} =	-176.00	Vol_{11} =	-3173
		Sum Vol =	17539 cubic feet
		Sum Vol =	650 cubic yards

$Vol_H = (A_1 + A_2) \times 1/2 \times Position_{H+1}$

Exxon Mobil Refining
Rain Basin 2 Flow Improvement Mod.
Baton Rouge, LA

Volume Calculations
North Inlet Rock Dikes
1 Rise: 1.5 Run

JEG Prog. No.: 07-AQ65-01
Engineer: Don Watson
Date: 04/14/2003

Volume excludes two (2') feet of additional consolidation settlement material per Soil Testing Report STE File 01-1240.

DEQ Rock Volume for Single North Rock Dike @ Radius 120'

Section	depth = h (ft)	Position (ft)	X Section Eqn $A_i = 1.5h^2 + 35.5h + 17.375$ ft^2			
1	2.00	0.00	A_1 =	94.38		
2	3.50	20.00	A_2 =	160.00	Vol $_{1-2}$ =	2544
3	3.00	20.00	A_3 =	137.38	Vol $_{2-3}$ =	2974
4	1.50	20.00	A_4 =	74.00	Vol $_{3-4}$ =	2114
5	0.50	20.00	A_5 =	35.50	Vol $_{4-5}$=	1095
6	0.00	10.00	A_6 =	17.38	Vol $_{6-7}$ =	264
7	-8.50	20.00	A_7 =	-176.00	Vol $_7$ =	-1586
					Sum Vol =	7404 cubic feet
					Sum Vol =	[redacted] cubic yards

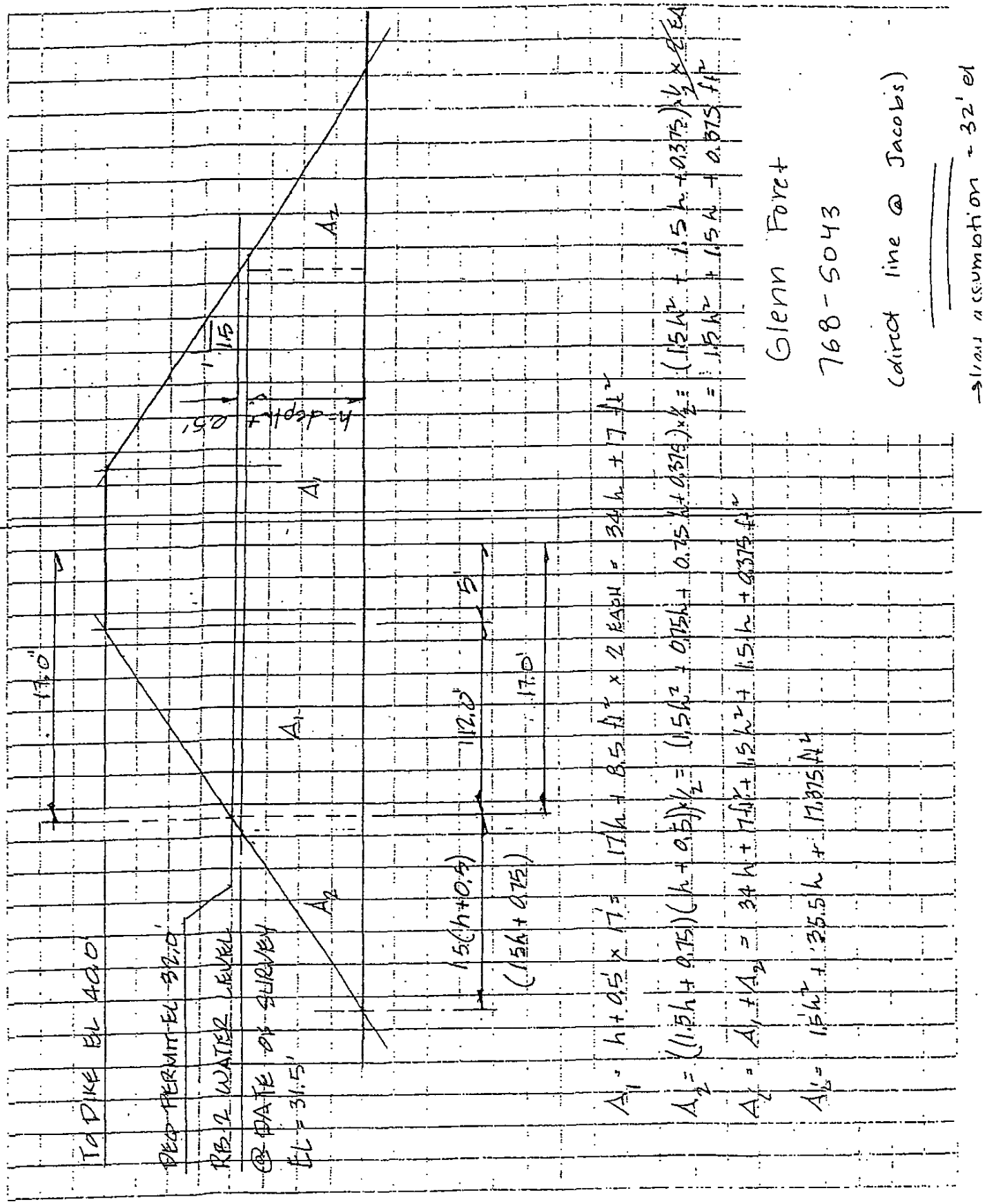
Vol $_{i-j}$ = $(A_i + A_j) \times 1/2 \times$ Position $_{i+1}$

JACOBS

Subject EXXON-MOBIL # 07-AR4596

RAIN BASIN 2 Sheet No. _____ Of _____

Authored by DW Date 4/03 Checked by Wyles Date 4/3



Glenn Fort
768-5043
(direct line @ Jacobs)

→ final accumulation = 32' el

JACOBS

Subject EXXON-MOBIL Job #07-AR45-90

RAIN BASIN 2 Sheet No. ____ Of ____

Authored by DW Date 4/03 Checked by MLegan Date 4/3

CALC EQUATION CHECK SOUTH ROCK DIKE @ R=105' EL=32.0'

$A_1 = 1.5(0.5)^2 + 35.5(0.5) + 17.375 = 35.5\ ft^2$

$A_2 = d \cdot H_o = 35.5\ ft^2$ $Vol = (35.5 + 35.5) \times \frac{1}{2} \times 20'$

$Vol = 710\ ft^3$

CALC EQUATION CHECK NORTH ROCK DIKE @ R=120' EL=32.0'

$A_3 = 1.5(3)^2 + 35.5(3) + 17.375 = 137.375\ ft^2$

$A_4 = 1.5(1.5)^2 + 35.5(1.5) + 17.375 = 74.0\ ft^2$ $Vol = (137.375 + 74.0) \times \frac{1}{2} \times 20$

$Vol = 2114\ ft^3$

Fire Fighting Equipment and Supplies

Appendix C

July 2004
W.O. #0016262

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(225) 292-3001

As required by LAC33: VII.521.B.1.d., the fire-protection measures for a facility are to be included within a Louisiana Solid Waste Permit Mandatory Modification Document. Appendix C is included to satisfy this requirement by describing the fire water system, mobile equipment and foam systems within the ExxonMobil facility. Appendix C was assembled from ExxonMobil's current Emergency Plans Manual. Due to the fluid nature of emergency manuals, the information provided within Appendix C is subject to periodic updates. ExxonMobil believes that these updates would not significantly impact the operations of Rain Basin 2. Therefore, ExxonMobil is requesting that LDEQ not require a solid waste permit modification in the event of an internal Emergency Plans Manual update. Should an internal update significantly impact the operations of Rain Basin 2, the need for a modification would be evaluated and supplemental documentation will be provided as necessary.

Chapter 6: Fire Fighting

SECTION **PAGE NO.**

6.1 General Information

Overcome Fear! This is the number one rule in effectively fighting fires. Actions born of panic often add to the seriousness of the emergency. Everyone has an inborn fear of fire, but a frightened person cannot act intelligently. Rather, he is likely to become panic-stricken and harm himself and others.

Respect the Power of Fire. A wholesome respect for the power of fire develops fire prevention thinking and leads to aggressive, but safe attack on fires.

Develop Self Confidence. A famous philosopher once said; "*The application of knowledge is power*". With increased knowledge of fire protection comes increased confidence in one's ability to prevent fires and attack them effectively.

Effective fire fighting involves pre-planning, fire assessment, fire control, and fire extinguishment, as described below.

Pre-Planning

Pre-planning is an effective tool to be used as much as possible. It allows the emergency responders to have the required knowledge to devise a plan of action for general hazards. Pre-planning also brings to light any unusual concerns that would take non-routine action to control, as well as further equipment and/or training needs for emergency personnel.

Fire Assessment

Assessing the emergency allows decisions that affect placement of equipment or manpower to be made safely and with full utilization prior to commitment. Table 6-1 on page 3 provides information on fire classification and extinguishing agents that should be used.

Fire Control

Preventing the fire from spreading often determines the success of extinguishing efforts. Prevention of fire spread includes protection of tanks, other structures, and pipelines that are affected either by direct flame impingement or by radiant heat. The following measures should be considered for prevention of fire spread:

- Proper placement of cooling streams using adequate water coverage with minimum water waste

- Maintaining adequate drainage of the fire area to ensure against floating, blazing oil into unfired areas. This may also provide a means of fuel removal and consequent product salvage.
- Construction of temporary drains, ditches, and dikes especially when a boil-over becomes imminent.
- Blanketing unfired pools of oil in fire-exposed areas with foam

Fire Extinguishment

Successful fire extinguishment results from the systematic application of planned procedures. There are three main steps to extinguishing a fire:

Eliminate Fuel Supply

This is accomplished by operational procedures such as depressurizing a system, blowing down a complete section, pumping out tanks, closing pipeline blocks, rerouting flow, etc. Eliminating the fuel supply is a certain method to extinguish a fire since a fire cannot exist without fuel. This is most effective on process unit fires.

The extinguishment of a fire without eliminating the fuel supply may allow a vapor cloud to form and drift until another source of ignition is found.

Eliminate Heat

Heat causes oil to vaporize, which then becomes fuel for the fire. Water is the most effective agent for eliminating heat. The finer the water spray, the greater the surface of the water that is presented for heat absorption.

Water applied in the form of spray or fog to the flame area reduces radiant heat, which produces additional oil vapor. It cools involved structures and equipment below the ignition point of oil vapors.

Prevent Air from Combining with Fuel

In most cases, this is a difficult procedure and must be accomplished by diluting the air with inert gas to reduce the oxygen content or by blanketing the fuel supply with a gas-tight barrier. Carbon dioxide and dry powder chemicals or wet steam are effective only if the entire fire area can be covered to smother the fire. Steam introduced into a system from which fuel is flowing also has a smothering effect.

Foam provides a barrier between fuel and air only if an unbroken blanket of foam is built up.

Table 6-1 identifies the three fire classes and groups them according to the fuel involved. It also provides extinguishing agents for each class.

Table 6-1
FIRE CLASSIFICATION AND EXTINGUISHING AGENTS

FIRE CLASS		FIRE TYPE	EXTINGUISHING AGENTS/ACTIONS
A		Solid combustible materials (wood, paper, fabric, etc.)	• Quench with water
B	B-2	Two-dimensional fires or single plane fires (spills) of flammable liquids and vapors such as petroleum products	• Starve • Smother • Quench • Use water, fog, or foam on large fires
B	B-3	Three-dimensional fires (complicated by pressure, falling stream, or free vapor), of flammable liquids and vapors such as petroleum products	• Starve • Use Hydro Chem technology (a water, foam, and dry chemical powder mixture)
C		Electrical circuits and equipment	• De-energize circuits and equipment. • Use a non-conducting extinguishing agent (Halon and carbon dioxide are preferred, but dry powder may also be used) • Smother and quench only after the circuit has been de-energized. • Do not use water or foam on live circuits.

Foams for Vapor Suppression

Firefighting foam is a common means of controlling the release of vapors from spills of hazardous materials. Foam is applied to unignited spills of flammable or

combustible liquids to prevent ignition. In this application, ignition is prevented by suppressing the rate of vapor release from the liquid, thereby preventing the accumulation of sufficient vapor to form a flammable mixture.

Firefighting foams are used on spills of materials that present hazards other than flammability. Aqueous foams are used to mitigate the emission of vapors from spills of hazardous materials. Conventional firefighting foams are used on most chemicals that exist as liquids at room temperatures. Special foams are required for hazardous materials which are highly acidic or highly alkaline, or which have boiling points below 20°C. Some hazardous materials, which are highly water-reactive, cannot be successful blanketed with aqueous foam of any type.

6.2 Specific Procedures

This section provides procedures specific to fighting fires on tanks and process units. Tank fires may be fully involved fires, rim or seal fires on floating-roof tanks, fires on the top or bottom of a sphere, tank truck fires, railroad tank car fires, or fires on barges or tankers. Process unit fires include electrical machinery fires, pump and compressor fires, trench and pit fires, furnace header and split tube fires, sewer fires, and spill fires on tower structures or on ground levels. Specific procedures are provided below for each type of tank and process fire.

Tank Fires

Use the following general guidelines for handling tank fires. Procedures for specific types of tank fires are provided under their respective sections.

1. Extinguish fires surrounding the tank before attempting to extinguish fire within the tank.
2. Conduct all necessary work within the firewall area during the early part of the fire so that as the fire progresses, extinguishment procedures can be carried on from a safer distance.
3. Fight fire from upwind, as it will be difficult to extinguish a fire on one tank that is being heated by an up-wind fire.
4. Cool tanks that are exposed to the heat of an adjacent fire by means of water curtains applied to the roof and shell to prevent excessive vaporization and lessen the danger of fire spread.

CAUTION:

All crude oils, fuel oil, and asphalt when burning, develop a "heat wave" that travels downward at a rate of from 15 to 50 inches per hour. Temperature of the oil in this heat wave may reach 500° to 600°F. When this heat wave reaches the bottom water or if sufficient water is entrained in the bottom oil, a violent boilover may result. Burning oil first erupts and then falls, spreading beyond the firewalls of the tank. The column of flame will be 300 to 400 feet in diameter at the base, spreading wider as it rises 1,000 feet or more. The beginning of a boilover is indicated usually by both an increase in height and in brightness of the flames immediately prior to the actual eruption of boiling oil. A boilover is a violent eruption, whereas, a slop-over results from expansion or frothing of the heated liquid.

5. Test the tank shell with a water stream to determine the downward progress of the heat wave.

6. If extinguishment has failed by the time the heat wave has reached a point 5 feet above a known bottom water level, evacuate all personnel immediately from the area.

> **CAUTION:**
>
> Successive boilovers often occur in burning tanks.

7. Be on guard against successive boilovers from a burning tank.

Fully Involved Tank Fires

Fully involved tank fires occur when the tank structure and its entire surface becomes fully involved in fire. This can occur with any type of tank design. A cone roof tank may have its roof completely displaced, which makes application of foam/water streams easy to achieve. However, when fighting fires, special problems may arise that must be overcome, such as:

- A roof may be partly displaced or the roof/shell seam may be split, making foam application difficult
- A floating roof may sink partially, trapping burning oil under and behind it making foam rundown to the entire surface area difficult

The fire fighting team must adapt to these situations and adjust their tactics accordingly. When responding to a fully involved, large diameter tank fire, perform the following:

1. Establish a defensive posture upon arriving at the scene until an adequate supply of water, pumping capacity, foam concentrate, large volume nozzles, supply hose, and manpower has arrived.
2. Identify and procure the necessary resources to initiate fire-fighting activities.

> **NOTE:** Each tank, depending on diameter, has a minimum application rate of foam/water solution needed to extinguish the fire. To begin fire fighting activities with less than the minimum application rate would be a waste of time and resources.

3. Determine diameter and surface area of tank.
4. Use the table below to determine minimum application rate. These are minimum rates based on 65 minutes to achieve extinguishment. If at all

possible, use greater rates to "overwhelm" the fire and accomplish quicker extinguishment.

TANK DIAMETER (ft.)	APPLICATION RATE (gpm/ft^2)
< 150	0.16
151 – 200	0.18
201 – 250	0.20
250 – 259	0.22
> 300	0.25

5. Extinguish any ground fires.
6. Protect surrounding tanks and equipment from radiant heat exposures using water sprays and water curtains.
7. Begin fire-fighting activities upon arrival of all fire fighting equipment and personnel.
8. The incident command must ensure that adequate manpower is onsite, and crews are rotated routinely to assure proper rest for the firefighters.

Rim or Seal Fire

Rim or seal fires usually occur on open top floating-roof tanks, where a portion or all of the seal area between the tank roof and the tank shell is burning.

When responding to a rim or seal fire, perform the following:

CAUTION:

Excessive water and foam on tank roofs can sink the roof and cause additional complications.

1. Check roof drain before applying water and foam to tank roofs.
2. Fight rim fires with foam set to the correct percent and applied to the inside of the foam dam.

CAUTION:

Blistering of paint on the tank shell can indicate excessive heat and the need for cooling water.

3. If paint blistering occurs or the tank shell is becoming hot, apply cooling water to the outside of the shell.
4. Avoid directing heavy streams of water into the flammable material at the roof edge as this may splash the burning product onto the roof and increase the fire.
5. If the roof becomes submerged in burning oil, apply foam by means of portable foam nozzles.

Sphere Top Fire

Fires associated with spheres should be extinguished by fuel elimination only. When responding to a fire located at the top of a sphere, the following procedures should be followed.

1. Stop movement of product to the sphere.
2. Open cooling water spray to the top valve assembly and to the top of the sphere so the run-off will cover the shell.
3. Apply cooling streams to adjacent threatened equipment.
4. Pump out the sphere contents to unaffected storage at a rate that will not pull a vacuum within the sphere.
5. Refill the sphere with water to float all remaining flammable material to the point of leakage when product pump-out has reached the limit as determined by available storage space, pump operations, etc.
6. Exercise caution to avoid forcing flammable liquid under pressure through the leak.
7. If sufficient space exists above the leak, water can be employed to float the flammable liquid above the leak.

NOTE: Performing this procedure properly allows the flames to be extinguished when water covers the leak.

8. Continue pumping until water appears in the flare liquid drum indicating that the flammable material has been eliminated.
9. Continue cooling streams after flame is extinguished until all danger of reignition from hot steel has been eliminated.

Sphere Bottom Fire

Fires associated with spheres should be extinguished by fuel elimination only. When responding to a fire located at the bottom of a sphere, perform the following:

1. Stop movement of product to or from the sphere.
2. Open cooling water sprays to the sphere so run-off will cover the shell.
3. Apply cooling water streams to the supporting structure and to the bottom piping assembly.
4. Apply cooling streams to adjacent threatened equipment.
5. Pump water to the sphere to float the flammable material above the leak. This will extinguish the flames if the water-pumping rate exceeds the rate of leakage.

CAUTION:

If a flare is flooded with hydrocarbon liquid, there could be a carryover from the flare system resulting in the possibility of ground or equipment fires.

6. Avoid flooding the flare with hydrocarbon when pumping water into sphere.
7. Gas free the sphere according to normal operational plans.
8. Water spray can be used to disperse vapors.
9. Continue cooling streams after flame is extinguished until all danger of reignition from hot steel has been eliminated.

Tank Truck Fires

The greatest concern of tank truck fires is the cargo. Tank truck fires with light ends cargo (ethylene, propylene, etc.) should only be extinguished by eliminating the fuel source. When responding to a tank truck fire with light ends cargo, perform the following:

1. Stop all pumping operations.
2. Close block valves in lines to tanks.
3. Apply cooling water spray to blanket the truck tanks completely.
4. Protect adjacent equipment with cooling water streams.

5. Shut off the supply of fuel to extinguish the flames, if control valves on the tank truck are operable.
6. If this is not practical, permit light ends to burn out under controlled conditions.
7. Extinguish liquids fire with dry powder or foam.
8. Continue cooling streams after flame is extinguished until all danger of reignition from hot steel has been eliminated.

Railroad Tank Car Fires

Products Other than LPG. When responding to a railroad tank car fire with products other than LPG, the following procedures should be followed.

1. Stop all loading and unloading operations at the racks.
2. Remove the spouts and close the domes of all unaffected cars.
3. Apply cooling water spray from hose lines to the tank of the burning car and adjacent cars.

CAUTION:

Directing water streams into the dome of the burning car could increase the intensity of the fire by:

- Splashing flammable material
- Floating flammable material out of the tank
- Causing the liquid to froth and slop or boil over.

4. Avoid directing water streams into the dome of the burning car.
5. Remove unaffected tank cars from the fire area, if possible.
6. Use dry powder or water to extinguish the fire.

LPG. Railroad tank fires with LPG products should be extinguished by fuel elimination only. When responding to a railroad tank car fire with LPG products (such as propylene, butadiene, etc.), perform the following:

1. Stop all loading and unloading operations at unaffected spots.
2. Close the valve in the loading and unloading lines of all unaffected cars.

3. Apply cooling water spray from hose lines to the burning car and adjacent cars.
4. Remove unaffected tank cars from the fire area, if possible.
5. Work under high pressure fog protection when attempting to close valves on burning railroad car containing LPG products.
6. If controls on the car are operable, close valves to stop the flow of vapor.

Barge and Tanker Fires

Perform the following when dealing with cargo fires on barges and tankers:

1. Stop all transfer of products.
2. Apply cooling water streams to deck and sides of vessel.
3. Work under high pressure water fog protection when attempting to close cover plates.
4. Extinguish fires at hatches by closing cover plates.
5. Extinguish fires at vents or manifolds with high pressure water-fog or dry powder extinguisher.
6. If tank seams have been opened by explosion, apply foam through the opening.
7. Protect dock facilities with the installed water spray system, the fire monitor system, and additional hose streams, if necessary.

Process Unit Fires

Process unit fires are extinguished principally by fuel removal. This is accomplished by using operational changes to reduce pressure, introducing steam to systems, and blowing down sections or the entire unit involved. Procedures specific to several types of fires that can occur in a process unit are provided in this section.

The following steps provide general procedures for handling process unit fires. The area and intensity of a fire will indicate the proper method of extinguishment.

1. Use dry powder chemical or steam to combat small fires.

CAUTION:

The use of water may cause flanges and joints to leak, thereby adding to the fire. Adjusting the water stream to spray will lessen this danger.

2. Use water in the form of spray since it is most effective on large area or intense fires that threaten damage to supporting structures and adjacent equipment.
3. Use foam only where it can blanket the burning fuel.

Electrical Machinery Fires

1. Do not use water or foam on electrical fires.
2. Operators: If possible, switch to spare machine.
3. If this is not possible, adjust or discontinue operations until equipment is operable.
4. De-energize the circuit, if possible.
5. Apply Halon, carbon dioxide, or dry powder to extinguish the fire.

Pump and Compressor Fires

1. Operators: If possible, switch to spare machine.
2. If this is not possible, adjust operations to take the affected machine out of service and isolate it.
3. If possible, drain or depressurize the lines from a remote location.
4. Apply steam or dry powder from portable extinguisher to the leak.
5. If portable extinguishers are inadequate:
   - 5.1 Blanket the fire area with water spray from hose lines and fog nozzles.
   - 5.2 Direct jets of high pressure water spray into the source of fuel until the operators have succeeded in stopping the flow of fuel.
6. Apply foam to trenches in which burning oil may accumulate, beginning at and covering the sewer drain to prevent fire entering the sewers.
7. Avoid working above sewer drains or near fire traps.
8. Maintain adequate draining of fire area.

Trench and Pit Fires

1. Locate and stop the source of leakage into the trench or pit.

2. Apply dry powder to the fire area.
3. If this is not successful, apply foam, covering the sewer drain first, if possible.
4. Apply high pressure water spray to prevent damage to adjacent equipment.
5. Avoid overflowing trenches or pits with water as this may cause spread of the fire.
6. Avoid working above drain or near fire traps.

Furnace Header

A header box fire is sometimes the result of abrupt change in process temperature. Use the following steps to respond to a furnace header fire.

1. Put steam in header box.
2. Make adjustments to return to normal temperatures.
3. If these changes do not stop the leakage and fire, follow the steps below for split furnace tube.

Split Furnace Tube

1. Take the furnace out of service either by bypassing the furnace or shutting down the unit.
2. Depressurize the furnace rapidly so that steam can be cut into the tubes to extinguish the fire.
3. Protect structural steel members that are in the flame by applying water spray from hose lines and fog nozzles.
4. Do not use foam or dry powder in the firebox as they are ineffective on this type of fire and will result only in waste.

Sewer Fires

CAUTION:

In most cases, a sewer fire occurs following a sewer explosion.

1. If there is a sewer fire and no explosion has occurred:
   1.1 Be prepared for an explosion while fighting the fire.
   1.2 Ensure no one is standing is working on or near the sewer outlets.

2. If a sewer explosion occurs, direct steam or water fog at sewer outlets in all gaseous areas.
3. Apply foam at each manhole from which flame is emerging.
4. Direct water streams into involved trenches to maintain flow toward the fire area. If there is oil on the water in the trenches, use foam.

Spill Fires - Tower Structures

1. Immediately determine the source of leakage or spill. Stop it, if possible.
2. If it is a continuous leak that cannot be stopped, remove the involved equipment from service, depressurize, and steam, if necessary.
3. Protect surrounding structures with water spray from hose lines equipped with fog nozzles maintaining the water flow until the operators control the flow of fuel.
4. Blanket small fires with steam or dry powder.
5. Avoid scattering burning material when applying steam or dry powder.
6. Blanket large fire areas with water spray from monitors or hose lines equipped with fog nozzles to protect supporting structures.
7. Maintain water flow until the operators control the flow of fuel.
8. If quantities of oil are flushed to lower levels and continued to burn in pools, apply foam.
9. Maintain adequate drainage of the fire area.
10. Avoid working above sewer drains or near firetraps.

Spill Fires - Ground Level

1. Immediately determine the source of leakage or spill. Stop it, if possible.
2. If it is a continuous leak that cannot be stopped, remove the involved equipment from service, depressurize, and steam, if necessary.
3. Protect surrounding structures with water from the hose lines equipped with fog nozzles maintaining the water flow until the operators control the flow of fuel.
4. Blanket small fire areas with dry powder.
5. Avoid scattering burning material when applying dry powder.

6. In case of a large spill, direct high pressure water fog into the source of leakage.
7. Apply foam to extinguish fires in oil pools or trenches.
8. Maintain adequate drainage of the fire area.
9. Avoid working above sewer drains or near firetraps.

Laboratory Fires

This type of fire requires different combating procedures because of glassware and special types of apparatus and equipment involved. Laboratory supplies include many chemicals that may emit toxic vapors when exposed to fire.

1. Do not enter a smoke-filled area without respiratory protection. Use self-contained breathing apparatus.
2. Use Halon or carbon dioxide portable extinguishers on small fires.
3. Use wheeled units or 17# Halon units for combating fires larger than the bench top size.
4. In case of large spills of flammable material, whether ignited or not, evacuate personnel from the building and cut off the fuel, air, gas, and electrical service to the building.
5. Cut off any other outside sources of fuel.
6. Use water fog or water spray only on fires that threaten to damage the building structure.

6.3 Equipment/Resources

The Refinery is equipped with an extensive inventory of fire fighting equipment and resources described in greater detail below, including the Refinery fire water system, various pieces of mobile equipment, and fixed foam systems:

Fire Water Systems

This section describes the Refinery Fire Water System as well as the system at Anchorage Tank Farm. Maryland Tank Farm has been demolished with the exception of five tanks. The tanks have been cleaned of product and no fire-fighting equipment is needed.

Refinery Fire water System

The Refinery Fire Water System is composed of a cast iron, plastic and steel pipe network. Fire hydrants and sprinkler systems connected to this system are located throughout the refinery. River water for the fire system is supplied from the Low Pressure River Water System (LPRW) controlled and operated by EULA. This system pumps water from the Mississippi River and holds approximately 35 pounds per square inch (psi) of pressure. Six fire water pumps take suction from LPRW and, together with P-12 that takes suction from WCLA final effluent, boost the pressure to 90-125 psi of pressure and discharge into the fire water system. Table 6-2 describes the fire water pumps.

The Refinery and Chemical Plant fire water systems are connected by two 10-inch fire water lines. These lines are normally blocked but can be opened to supply fire water from either plant to the other when needed. The Refinery fire water system can also be connected to Formosa chemicals and Albemarle Corporation if needed during an emergency.

Clarified river water (CRW) is available to use as fire water during Refinery emergencies or other special circumstances. For example, in an emergency where the Refinery loses electricity, the clarified river water system can supply water to the fire water system. At the River Water Clarification Plant (RWCP), P-6002 diesel-driven water pump can supply clarified water to the fire water system. P-5 and P-8 fire water pumps are equipped with clarified river water lines connected to the suction of P-6002. Switching suction valves from LPRW to CRW allows P-5 and P-8 to take suction directly from the CRW system. The other pumps listed in the table below can also be connected to P-6002.

Table 6-2

FIRE WATER PUMPS

PUMP	GPM	HP	TYPE	LOCATION	OPERATION
P-4	3,000	350	T	Ave. K & 10th St.	• Can be started and stopped by EULA controller through TDC-3000 either at EULA or at OSCC • On pressure control; automatically starts when Refinery fire water pressure drops below 100 psi.

P-5	4,000	480	D	Ave. S & 10th St. (east of PHLA-2)	• Can be started by EULA controller through TDC-3000 either at EULA or at OSCC. • Can only be shut down manually at the pump • Has pressure letdown set at 125 psi to relieve excess pressure on the fire water system
P-7*	3,000	450	T	Dock (Sprinkler)	• Remote start/stop from Dock Office • Can discharge into the fire water system or supply water to the Dock sprinkler system
P-8	3,000	300	M	Ave. N & 15th St.	• Can be started and stopped by the EULA controller through TDC-3000 at EULA or at OSCC • Has pressure letdown set at 125 psi to relieve excess pressure on the fire water system
P-9	3,500	460	D	Ave. M & 5th St. (east of Alky)	• Can be started by EULA controller through TDC-3000 either at EULA or at OSCC. • Can only be shut down manually at the pump • Has pressure letdown set at 125 psi to relieve excess pressure on the fire water system
P-10	3,000	350	T	17th St. (south of Cokers)	• Can be started and stopped by the EULA controller through TDC 3000 at EULA or at OSCC
P-11	3,000	300	M	Ave. H & 13th St. (NE of 7-PSLA)	• Can be started and stopped by the EULA controller through TDC-3000 at EULA or at OSCC • Has pressure letdown set to operate at 125 psi that relieves excess pressure on the fire water system
P-12	5,000	600	M	EULA	• Can be started and stopped by the EULA controller through TDC-3000 at EULA or at OSCC

* P-7 is owned and operated by Docks.

PUMP	GPM	HP	TYPE	LOCATION	OPERATION
P-6002	16,000		D	RWCP	• During a total power failure, pumps water from 601 and 602 Tanks (total capacity 80,000 bbls) into fire water system at 140 psi. • Clarified water can be cut into Fire Water System at 7 tie-ins listed below; block valves must be operated manually. 1. Utility Road and South Dock Road 2. 16th Street and Avenue U

					3. To suction of P-5 4. 10th Street and Avenue O 5. 16th Street and Avenue N 6. 16th Street and Avenue J 7. 10th Street and Avenue J

Anchorage Tank Farm (ATF) Fire Water System

The Fire Water System at ATF is described in the table below.

Table 6-3
ANCHORAGE TANK FARM FIRE WATER SYSTEM

NAME	DESCRIPTION	CAPACITY	COMMENTS
Tank 1544	Fire Water Tank	Combined capacity of 1521 and 1544 Tanks is 70,000 bbls	Primary source of fire water at ATF

NAME	DESCRIPTION	CAPACITY	COMMENTS
		At 3,000-4,000 gpm rate, combined capacity will last approximately 16 hrs.	Located in the SW portion of ATF Filled with well water from P-10 or P-9 (backup)
Tank 1521	Fire Water Tank	Combined capacity of 1521 and 1544 Tanks is 70,000 bbls At 3,000-4,000 gpm rate, combined capacity will last approximately 16 hrs	Secondary source of fire water at ATF Located in the NE portion of ATF Filled from 1544 Tank with pump P-11
P-9	Well Pump		Backup for filling 1544 Tank
P-10	Well Pump		Fills 1544 Tank with well water
P-11	Pump	Vertical multi-stage centrifugal electric motor-driven pump Pump rate is 1500 gpm	Primary fire water pump Located on south side of 1544 Tank Supplies water from 1544 Tank to the fire water closed loop system in the tank field Pumps water from 1544 Tank into 1521 Tank
P-22	Pump	Horizontal diesel-driven centrifugal pump Pump rate is 2500 gpm	Located on north side of 1521 Tank

NOTES:

- A manifold is provided north of 1521 Tank for the use of a pumper truck. The pumper truck can take suction from 1521 Tank and discharge back into the ATF Fire water System.
- Emergency makeup fire water can be pumped from the Refinery to ATF via the No. 4 crude system by installing a water connection at the Anchorage manifold at North Dock Road and Batture Road. The No. 4 crude line would first be displaced into a storage tank west of 1521 Tank. An 8" spool at 1521 Tank manifold could then be turned and 1521 Tank backfilled with water from the Refinery.
- Additional fire water supply is available via a tie-in to the fire water systems at PAL, ACT, and the Enterprise facility.

Mobile Equipment

Mobile Equipment includes pumper trucks, foam tankers, water tankers, a rescue truck, an ambulance, and a fireboat as described below. All units use 3M-AFFF-ATC Light Water Foam.

Pumpers

All the fire trucks described below are equipped with a stock of nozzles, tools, hoses, safety equipment, and miscellaneous fittings and supplies.

#54 Fire Truck. The #54 truck is an E One 1994 model, 450 HP Turbo Automatic, 3000-gpm from draft, 1000-gallon foam concentrate, single-stage 8FG water pump, equipped with:

- Three 5" storz discharges
- Six 2½" NPSH threads
- Two preconnected 1½" hoses in cross lays
- Hot shot foam system that serves all discharges
- Dry chemical through turret

#36 and #53 Fire Trucks. The #36 and #53 trucks are 1988 Chubb National Foam pumpers, Detroit turbo-charged diesel with automatic transmission. Pump capacity from draft is 2,000 gpm. Both trucks are equipped with a servo-command foam proportioning system. Foam capacity is 1,000 gallons of concentrate.

#47 Ladder Truck. The #47 Truck is a 1982 E One Detroit turbo-charged assisted diesel with automatic transmission. Total pump capacity from draft is 2,000 gpm. The truck has a hydraulic pump that runs off the transmission to run the outriggers and for the boom (ladder) operation. A balanced foam pressure proportioning system is powered by a PTO (power take off) from the transmission to provide foam mixture. The truck holds approximately 900 gallons of foam concentrate in a stainless steel tank of which approximately 850 gallons is usable under normal operation. The boom (ladder) on this truck can reach a height of 110 feet above ground level and swivel 360 degrees. An anti-electrocution platform is provided on the operator's side of the truck. This truck is approximately 39' 3" long, 10' 8" high, and 9' 6" wide.

#76 Fire Truck. The #76 Truck is a 1978 Ford diesel with automatic transmission. It has a 1,500-gpm Hale water pump and a National foam-balanced pressure proportioning system with a 1,000-gallon foam concentrate tank.

Foam Tankers - #45 and #75 Tank Trucks

The #45 and #75 Tank Trucks are 1979/1980 GMC diesel with automatic transmission and hold 3,000 gallons of foam concentrate. They are located at the Central Fire Station. All fittings required to transfer foam are on the truck.

Water Tanker - # 63 Truck

The #63 Truck is a 1990 GMC 2½ ton truck capable of towing "Big Red" 6,000-gpm diesel pump. The truck has a 300 gpm pump with a 600-gallon water tank and a 25-gallon foam tank. The truck is equipped with a preconnect 1½ inch hand line 200 feet long that can be used for water or foam delivery. The truck is also equipped with a 6,000-gpm nozzle mounted on the deck. This nozzle would be supplied from the "Big Red" diesel pump or foam pumpers and would be used mainly in tank fire fighting.

The #63 is the only truck that is equipped with a water tank, therefore it is the first response to any vehicle fire call where water supply may be limited, such as in parking areas, as well as for grass fire calls where having a mobile fire truck is desirable.

Rescue Truck

The Refinery maintains a specialized rescue truck for use by the Volunteer Rescue Squad. The rescue truck is a 1999 International and is housed in the Fire Station. The rescue truck has the equipment necessary to perform all possible high angle, heavy rescues that might be encountered.

Ambulance

The Plant ambulance is a 1996 Freightliner. It is driven by the Security Traffic Officer and maintained by the Fire Station. The ambulance is capable of transporting three stretcher cases. It is housed behind the Medical Department in the Refinery. Some of the major components are:

- Oxygen Resuscitator
- Rolling Litter
- Spine Board
- First Aid Kit
- Leg Splints
- Oxygen Bank
- Automatic External Defibrillator (AED)

The ambulance operability is checked daily by Emergency Medical Response Team representatives and the results are recorded with all concerns promptly

addressed. The Emergency Medical Response Team is responsible for maintaining the medical supplies on the ambulance and checking supplies after each run.

Fire Boat: SeaRiver BAYOU STATE

The SeaRiver BAYOU STATE is assigned to Baton Rouge as part of ExxonMobil Shipping Company's Gulf Coast Branch inland waterways fleet. It is used as a ship berthing tug and in primary fire response for the ExxonMobil Docks. The BAYOU STATE is available for other harbor emergencies through the Mutual Aid organization.

The SeaRiver BAYOU STATE is the only fully equipped fireboat in the Baton Rouge area. Its fire fighting system includes a combination water and foam system with a 1,500 gallon-per-minute pump, a 2,000-gallon foam concentrate storage tank with one fixed variable and two portable variable stream fire monitors. The fixed nozzle is capable of a 250-foot reach when used alone.

The 2,000 gallons of foam concentrate last 50 minutes at a 1,500-gpm application rate at 3 percent foam solution. Resupply of foam concentrate is done with the nurse trucks (3,000 gallons each) and 305-gallon totes or 55-gallon drums. ExxonMobil has a contract with Williams Fire and Hazard Control that allows immediate delivery of foam if needed.

The SeaRiver BAYOU STATE may be called to assist in an emergency by USCG, Port Authority, State Police, Mutual Aid, or vessels in distress via Marine radio channels. Normally, calls for assistance would come in through the Mutual Aid System to the Refinery OEC.

The BAYOU STATE Captain notifies the Port Captain of all calls and coordinates all emergency activities with the Refinery Superintendent. If the emergency is a Mutual Aid or ExxonMobil Dock fire situation, the Refinery Superintendent requests that OEC call the 801 or 811 volunteer fire fighters to assist the BAYOU STATE crew in the fire fighting effort.

The Refinery Superintendent makes the decision to hold departure until the volunteers have boarded or to have them brought aboard via a launch.

In a fire situation at the ExxonMobil Docks, the Refinery Superintendent is the overall coordinator in consultation with the affected ship's Captain or First Mate aboard. The BAYOU STATE Captain, crew, and volunteers follow fire fighting

directions via emergency frequency radio, with the BAYOU STATE Captain making decisions on safety of the vessel and crew.

Deluge Systems

Several areas in the Refinery are equipped with deluge systems for fire suppression. These include:

- Water deluge systems in areas such as loading racks, docks and storage areas. EMPR barrel storage area deluge system can be operated as water only or water and foam.
- Foam deluge systems (KDLA)

Fixed Foam Systems

Anchorage Tank Farm (ATF)

ATF large diameter crude tanks 1501, 1502, 1503, 1504, 1505, 1506, and 1525 are all external floating roof tanks. 1501, 1502, 1503, 1504, 1505 and 1506 tanks range between 240 - 290 feet in diameter. 1525 tank is 166 feet in diameter. These tanks are equipped with fixed foam systems to be used in the event of a seal fire. Each system consists of a 400-gallon foam bladder drum that supplies foam/water solution into a sprinkler system for each tank. The system uses freeze-protected foam.

The seal area of each tank is equipped with a foam dam that holds the foam over the seal area. Each drum has connections for our mobile fire equipment, enabling us to take suction and discharge foam from our pumpers into the sprinkler system in the event we deplete the 400-gallon supply in the fixed system. 1501, 1504, and 1505 tanks have separate foam drums for each tank. 1502 and 1503 tanks share a drum, as do 1506 and 1525 tanks. These systems are manual systems requiring ATF operators or fire squad members to manually open two valves.

Docks

The Docks Fixed Foam System provides a 15-minute supply of freeze-protected foam to the Docks System which includes elevated monitors in each berth along with the foam piping originating with the foam truck manifold located on South Dock Road just south of Plantation Pipeline Company Control Room and terminating at Nos. 1 through 5 berths. Another foam truck manifold is located south of the south clarifier at WCLA which supplies foam to the Docks via No. 1

berth. Each berth mentioned has two (2) risers off the main foam line, and elevated monitors to cover the ship's manifold at any river stage.

A foam truck is connected to a fire water supply and discharges foam into the foam manifold via 2½" hose connections.

Fire hoses are connected to the foam line risers in Nos. 1, 2, 3, 4, or 5 berths for the application of foam.

Pre-connected 55-gallon foam drums are stationed along the Dock Approach Road, at Shore Station adjacent to the Plantation Pipeline office, and at the Knoxfield Analyzer House.

KDLA

KDLA Unit foam system consists of four systems. The Second Floor Filter Room Foam Lines consist of foam piping originating at ground level south of KDLA battery limits, on the east side of the Satellite Building, east of the corner of 16th street and Avenue N, and terminating in the filter room on the 2nd floor. The D-800 system consists of piping which can deliver foam or fire water to the following areas, numbered from west to east:

1. P-500's, P-401's, P-426's, P-7, P-207, P-402's
2. P-501A/B
3. G-12, G-17, P-202's, West End
4. G-112, G-113
5. Filters #7 though #14
6. Filters #1 through #6

Two additional systems are:

- Portable Foam Eductor Nozzles consisting of three 55-gallon drums attached to fire monitors
- 60-gallon Foam Generator consisting of four fixed 60-gallon integrated foam systems with nozzles

Sales Station

The Baton Rouge Sales Station has a fixed foam system at its gasoline truck loading facilities on Scenic Highway. This fixed foam system consists of the following:

- Three electronic fire detectors on each of the five loading stations for a total of 15 sensors. When a detector is activated, foam is delivered to all stations via the foam piping.
- A 500-gallon foam storage tank, located in a building just north of loading stations. The foam storage tank is kept full of 3M-AFFF Light Water Foam concentrate.
- High pressure fire water supply
- Foam proportioner
- Foam piping from proportioner and storage tank to loading stations. Foam is applied via this piping to the ground level as well as overhead and is delivered to all stations when activated.
- Automatic valves which deliver fire water and foam-to-foam proportioner, and deliver foam to loading stations after receiving signal from electronic sensors.
- The Electronic Control Panel Board is located in the foam storage drum building. It receives signals from electronic sensors on loading stations, and delivers signals to automatic valves. This panel can be used to monitor or test foam system.

Foam Inventory and Outside Sources

Foam for all types of fires is stored onsite at the Refinery in the locations described in the table on the following page.

LOCATION	TANK CAPACITY (gallons)
Truck 54 (Pumper)	1,000
Truck 36 (Pumper)	1,000
Truck 53 (Pumper)	1,000
Truck 45 (Tanker)	3,000
Truck 47 (Ladder)	900
Foam Tanks at Fire Station	7,000
Truck 76 (Pumper)	1,000

Truck 75 (Tanker)	3,000
Stores	10,000

Williams Fire and Hazard Control has access to a much larger supply (minimum 10,000 gallons) of foam from Decatur, Alabama and Houston, Texas with a 5-6 hour delivery. In case of a major fire, foam is available from:

Williams Fire and Hazard Control: 24 hour numbers

(281) 999-0276
(409) 727-2347

Louisiana Emergency Resource Supply Network ("Hired Gun Gang")

The Louisiana Emergency Supply Network, also known as the "Hired Gun Gang", is a mutual aid group made up of representatives from south Louisiana area petrochemical companies. Each member company has agreed to send aid to other members in the event of a major incident.

In emergencies such as large diameter tank fires, where the need for extreme pumping rates, relay water supply, and large volumes of fire fighting foams are needed, additional pumps, hoses, foam, nozzles, and other equipment are available through this network. In the event of a large-scale incident in our complex, this network is activated to supplement supplies and equipment that may be limited.

Williams Fire and Hazard Control, a member company, is the administrator of the group. The Hired Gun Gang can be called 24 hours a day by using the numbers listed above for Williams Fire and Hazard Control.

Miscellaneous Equipment

Listed below are various other pieces of fire fighting equipment located at the Refinery Fire Station or the Fire Training Grounds.

- "Big Red" 6,000-gpm portable diesel pump (trailer-mounted)
- Ten portable monitors (trailer-mounted)
- Two exhaust fans (gas-powered)

- One chlorine repair kit ("B Kit") for emergency repairs to chlorine cylinders
- One breathing air trailer with 9 breathing air cylinders for refilling Scott Air Paks
- One CO_2 response trailer with six 75 pound CO_2 cylinders for electrical fires
- One dry chemical trailer with 1,300 pounds of Purple K powder
- One 6,000-gpm trailer-mounted "Top Gun" nozzle
- One 2,000-gpm trailer-transported "Hired Gun" nozzle
- Two skid-mounted dry powder units
- 1,000 pounds Purple K dry powder

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Boring Logs, Well Construction Diagrams and Report to Plug and Abandon Monitoring Wells

Appendix D

July 2004
W.O. #0016262

Environmental Resources Management
3029 South Sherwood Forest Boulevard, Suite 300
Baton Rouge, Louisiana 70816
(225) 292-3001

LEGEND

GW		WELL GRADED GRAVELS OR GRAVEL-SAND MI LITTLE OR NO FINES.
GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES.
GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.
SW		WELL GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.
SM		SILTY SANDS, SAND-SILT MIXTURES.
SC		CLAYEY SANDS, SAND-CLAY MIXTURES.
SC-H		SAME AS ABOVE WITH HIGH LIQUID LIMIT.
ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
OL		ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY.
MH		INORGANIC SILTS MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.
CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
PT		PEAT AND OTHER HIGHLY ORGANIC SOILS.
		SANDSTONE
		NO SAMPLE OR RECOVERY.

ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 1 OF 2

WORK ORDER NO.: 14-83 BORING NO.: DMS-1

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-15-91 DATE COMPLETED: 9-19-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 25 FT. DEPTH 25 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

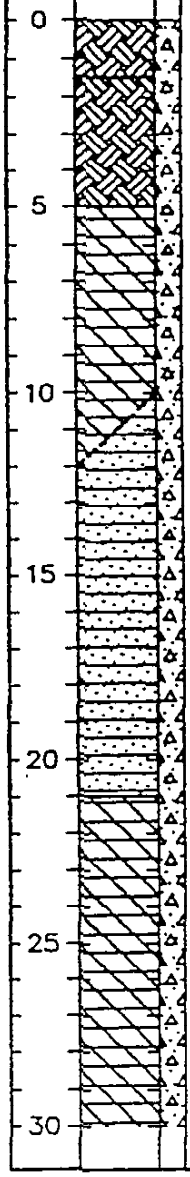
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 45 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 55 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-23 / HSA-23-55 LOG BY: B. BRAY / B.B. BROOM



DEPTH (FEET)	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
			0.0–1.5	FILL: LIMESTONE GRAVEL, COMPACTED.
			1.5.0–5.0	FILL: RUBBLE (BRICK AND CONCRETE) WITH BROWN AND GRAY SILTY CLAY.
			5.0–10.0	SILTY CLAY: GRAY WITH SAND, BLACK PARTICLES AND ORGANICS, STRONG CHEMICAL ODOR. (LOG FROM CUTTINGS).
			10.0–21.0	GRADES TO. SILTY SAND: GRAY WITH BLACK STAINING, STRONG CHEMICAL ODOR. (LOG FROM CUTTINGS).
	0.3 (BG)	21.0–25.0 25.0–28.0 28.0–33.0	21.0–53.0	SILTY CLAY: YELLOW BROWN MOTTLED WITH LIGHT GRAY, FIRM, DENSE.

ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 2 OF 2

WORK ORDER NO.: 14-83 BORING NO.: DMS-1

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-15-91 DATE COMPLETED: 9-19-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 25 FT. DEPTH 25 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

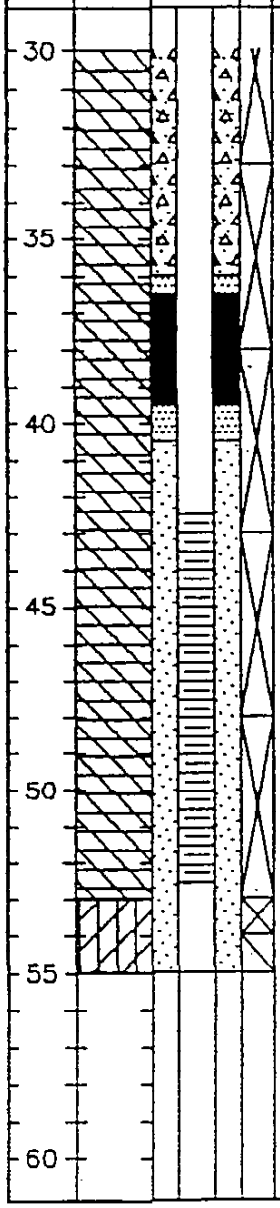
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 45 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 55 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-23 / HSA-23-55 LOG BY: B. BRAY / B.B. BROOM



DEPTH (FEET)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
30	28.0–33.0		FRACTURE IN SILTY CLAY AT 32.0 FT.
35	33.0–38.0		
40	38.0–43.0		
45	43.0–48.0		FRACTURE IN SILTY CLAY AT 42.5 FT.
50	48.0–53.0		FRACTURE IN SILTY CLAY FROM 48–53 FT. ABUNDANT NODULES (CARBONATE) FROM 48–51 FT.
	53.0–55.0	53.0–55.0	CLAYEY SILT: LIGHT GRAY, SOME MOTTLING, WITH LIGHT YELLOW.
55			BORING TERMINATED AT 55 FT. ON 9-19-91.
60			

ERM-SOUTHWEST, INC.

FIELD BORING LOG

WORK ORDER NO.: 14-83 BORING NO.: DMS-2

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-19-91 DATE COMPLETED: 9-21-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 21 FT. DEPTH 21 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 35.5 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 48 FT. STICKUP: 3.0 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-21 / HSA-21-48 LOG BY: B. BRAY / B.B. BROOM

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0						0–1.5	FILL: GRAVEL WITH LIGHT BROWN, SAND, SILT AND CLAY, COMPACTED.
5						1.5–18.5	FILL: GRAVEL, RUBBLE (BRICK, CONCRETE, TERRACOTTA PIPE) WITH BLACK STAINING AND STRONG CHEMICAL ODOR (LOG FROM CUTTINGS).
10							LOST CIRCULATION IN FILL MATERIAL, STRONG CHEMICAL ODOR.
15							
20				0.0	20.0–24.0		
25						18.5–38.0	SILTY CLAY: GRAY, FIRM, DENSE, NO CHEMICAL ODOR.
30					28.0–33.0		(LOG FROM CUTTINGS).

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ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 2 OF 2

WORK ORDER NO.: 14-83 BORING NO.: DMS-2

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-19-91 DATE COMPLETED: 9-21-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 21 FT. DEPTH 21 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 35.5 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 48 FT. STICKUP: 3.0 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-21 / HSA-21-48 LOG BY: B. BRAY / B.B. BROOM

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
30					28.0-33.0		
35					33.0-38.0		(LOG FROM CUTTINGS).
40					38.0-40.0	38.0-43.0	CLAYEY SILT/CLAYEY SAND: GRAY, SILT TO VERY FINE GRAINED SAND, SOFT.
45					40.0-43.0	43.0-48.0	SAND: GRAY, FINE TO MEDIUM GRAINED, WELL SORTED, SOME CLAY.
50							BORING TERMINATED AT 48 FT. ON 9-21-91.
55							
60							

ERM-SOUTHWEST, INC. FIELD BORING LOG

WORK ORDER NO.: 14-83 BORING NO.: DMS-3

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-17-91 DATE COMPLETED: 9-20-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 36 FT. DEPTH 36 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

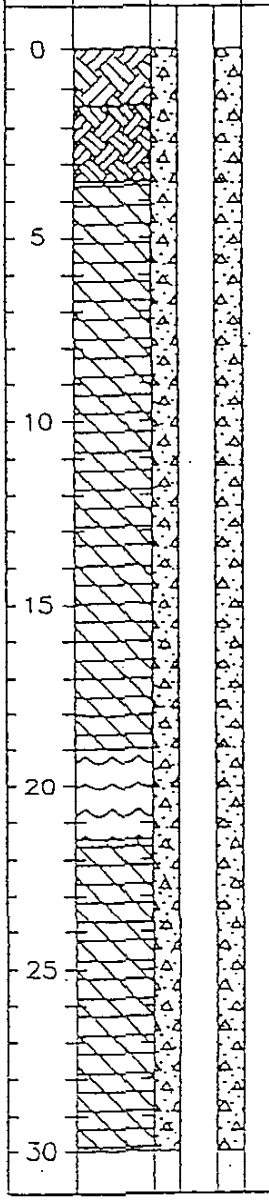
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 45 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 63 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-O-36 / HSA-38-55 LOG BY: B. BRAY / B.B. BROOM



DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0-1.5	FILL: GRAVEL AND SAND, COMPACTED.
1.5-3.5	CLAY: LIGHT BROWN AND GRAY WITH SHELLS, SOME BLACK STAINING, VERY STIFF.
3.5-19.0	SILTY CLAY/CLAYEY SILT: GRAY WITH WOOD FRAGMENTS, VERY STRONG CHEMICAL ODOR.
19.0-21.5	ORGANICS: LOGS AND ROOTS WITH SOME GRAY CLAY.
21.5-36.0	SILTY CLAY: GRAY, STIFF, STRONG CHEMICAL ODOR.

ERM-SOUTHWEST, INC. FIELD BORING LOG

WORK ORDER NO.: 14-83 BORING NO.: DMS-3

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-17-91 DATE COMPLETED: 9-20-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 36 FT. DEPTH 36 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

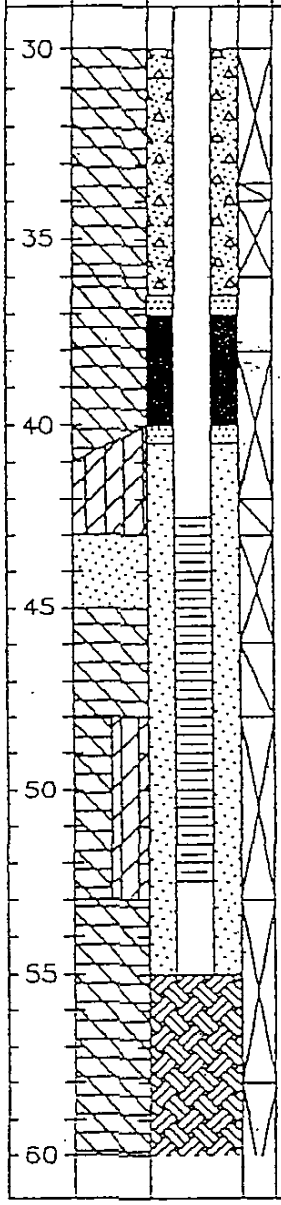
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 45 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 63 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-36 / HSA-36-55 LOG BY: B. BRAY / B.B. BROOM



DEPTH (FEET)	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR, MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
30	4.0	30.0–34.0		
	1.5			
35	1.0	34.0–36.0		
	0.3		36.0–40.0	SILTY CLAY: GRAY, TRACE SILT, DENSE, VERY STIFF. NO ODOR. GRADES TO:
40		38.0–43.0	40.0–43.0	CLAYEY SILT: GRAY, TRACE VERY FINE GRAINED SAND, MOIST TO WET, FIRM, MEDIUM DENSE.
			43.0–45.0	SAND: GRAY, VERY FINE TO FINE GRAINED, SOFT, SATURATED.
45		43.0–48.0	45.0–48.0	CLAYEY SILT: GRAY, MOIST, FIRM, MEDIUM DENSE.
50		48.0–53.0	48.0–53.0	SILTY CLAY/CLAYEY SILT: GRAY, MOIST, FIRM, MEDIUM DENSE, ORGANICS AT 51–52 FEET.
55		53.0–58.0	53.0–63.0	SILTY CLAY: GRAY, MOIST, FIRM MEDIUM DENSE, DECREASING MOISTURE.
60		58.0–63.0		

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ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 3 OF 3

WORK ORDER NO.: 14-83 BORING NO.: DMS-3

PROJECT: INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-17-91 DATE COMPLETED: 9-20-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 38 FT. DEPTH 38 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 45 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 63 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-38 / HSA-38-55 LOG BY: B. BRAY / B.B. BROOM

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR, MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
60					58.0-63.0		
							BORING TERMINATED AT 63 FT. ON 9-20-91.
65							

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ERM-SOUTHWEST, INC.

FIELD BORING LOG

WORK ORDER NO.: 14-83 BORING NO.: DMS-4

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-18-91 DATE COMPLETED: 9-21-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 44 FT. DEPTH 44 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

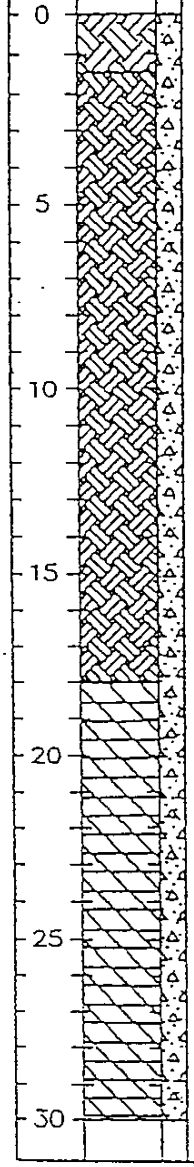
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 55 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 65 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-44 / HSA-44-65 LOG BY: B. BRAY / B.B. BROOM



DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0-1.5	FILL: GRAVEL, BRICK, LIGHT BROWN SAND AND CLAY.
1.5-18.0	FILL: SHELL, PEA GRAVEL, SAND AND CLAY MIXED WITH SOME WOOD. NO ODOR. (LOG FROM CUTTINGS). GRADES TO: LIGHT BROWN AND GRAY SILTY CLAY FILL MATERIAL WITH LOOSE SHELL AND GRAVEL. (LOG FROM CUTTINGS).
18.0-40.0	SILTY CLAY: GRAY, MEDIUM STIFF, STRONG CHEMICAL ODOR. (LOG FROM CUTTINGS). TRACE WOOD FRAGMENTS. STRONG CHEMICAL ODOR. (LOG FROM CUTTINGS).

ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 2 OF 3

WORK ORDER NO.: 14-83 BORING NO.: DMS-4

PROJECT INTER. STAT. M.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-18-91 DATE COMPLETED: 9-21-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 44 FT. DEPTH 44 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

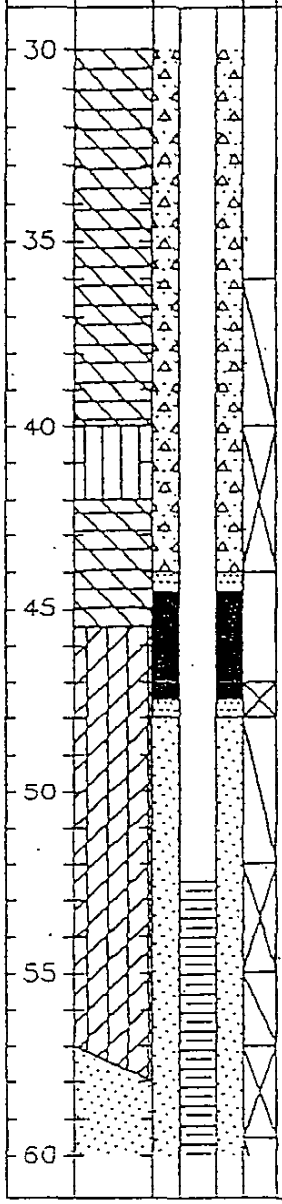
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 55 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 65 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-44 / HSA-44-65 LOG BY: B. BRAY / B.B. BROOM



PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR, MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
	36.0-40.0		BLACK STAINED VERY SOFT SILTY CLAY (NO RECOVERY, LOG FROM CUTTINGS ON SAMPLER).
0.6-1.2		40.0-42.0	SILT: GRAY, SOME CLAY COHESIVE, NO VISIBLE STAINING.
0.0-0.6		42.0-45.5	SILTY CLAY: GRAY, MEDIUM STIFF, STRONG CHEMICAL ODOR.
	45.5-57.5	45.5-57.5	CLAYEY SILT: DARK GRAY, SOFT, CHEMICAL ODOR WITH BLACK STAINING. NO CHEMICAL ODOR AND NO VISIBLE SOIL STAINING. GRADES TO
	52.0-57.0		
	57.0-62.0	57.5-65.0	SAND: GRAY VERY FINE TO FINE GRAINED SAND, MODERATELY WELL SORTED, SOFT, SATURATED.

ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 3 OF 3

WORK ORDER NO.: 14-83 BORING NO.: DMS-4

PROJECT INTER. STAT. W.W. OWNER: EXXON REFINERY LOCATION: WWTP

DATE STARTED: 9-18-91 DATE COMPLETED: 9-21-91

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 44 FT. DEPTH 44 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 55 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 65 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: LAYNE ENV. / FUGRO GEO. DRILLER: D. SHOWS / J. KEY

DRILLING METHOD: MR-0-44 / HSA-44-65 LOG BY: B. BRAY / B.B. BROOM

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INTERVAL (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR, MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
60					57.0–62.0		
65							BORING TERMINATED AT 65 FT. ON 9-21-91.
70							

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ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 1 OF 3

WORK ORDER NO.: 14-97 BORING NO.: SW-1

PROJECT: SOLID WASTE MONITORING SYSTEM OWNER: EXXON, CO., USA LOCATION: WWTP

DATE STARTED: 6-22-92 DATE COMPLETED: 6-23-92

SURFACE CASING: TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

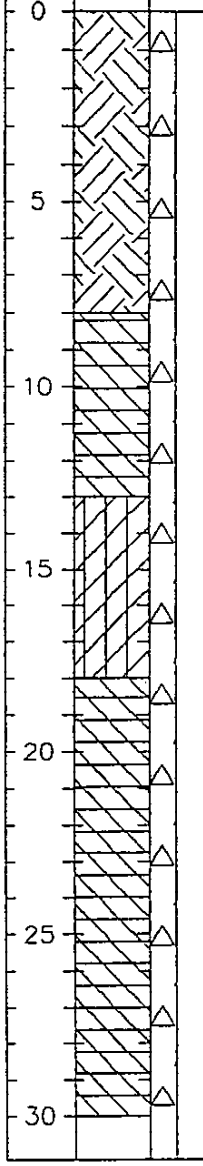
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE .01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 80 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 80 FT. STICKUP: 2.5 FT.

DRILLING COMPANY: FUGRO GEOSCIENCE DRILLER: J. KEY

DRILLING METHOD: HOLLOW STEM AUGER LOG BY: G. GABALDON



DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0							
					2.0	0.0–8.0	FILL: SILTY CLAY, BROWN, MOIST, STIFF, SOME FINE SAND, IRON STAINING, ODOR, ROOTS, WOOD FRAGMENTS.
5					1.5		
					1.4	8.0–13.0	SILTY CLAY: GRAY, MOIST, STIFF, WOOD FRAGMENTS.
10							
					1.5	13.0–18.0	CLAYEY SILT: GRAY, MOIST, STIFF, WOOD FRAGMENTS, ROOTS, ORGANIC RICH LENSES, SOME FINE SAND.
15							
					1.0	18.0–44.0	SILTY CLAY: GRAY, SOME BROWN MOTTLING NEAR TOP, MOIST, STIFF TO VERY STIFF, WOOD FRAGMENTS, SOME FINE SAND.
20							
					0.5		
25							
					2.1		
30							

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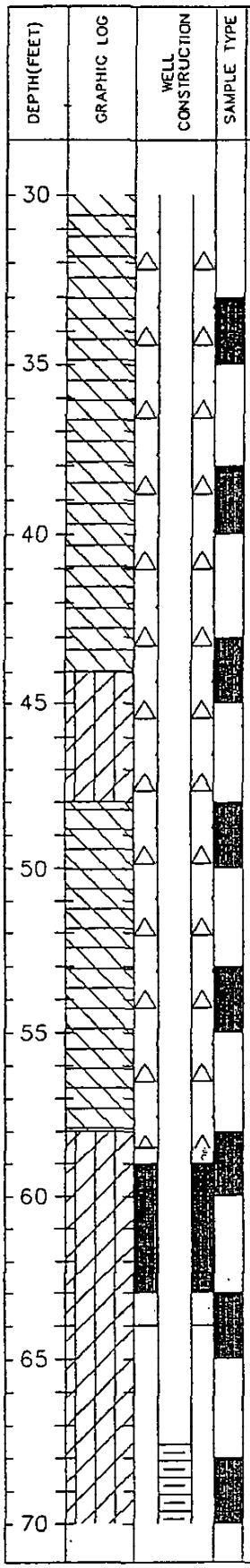
ERM-SOUTHWEST, INC. FIELD BORING LOG

WORK ORDER NO.: 14-97 DATE: 6-23-92 BORING NO.: SW-1



SAMPLE RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
2.1		AS ABOVE, SATURATED 33.0–33.5 FEET.
2.0		
2.0	44.0–48.0	CLAYEY SILT: GRAY, MOIST, STIFF TO VERY STIFF, WOOD FRAGMENTS, SOME FINE SAND.
2.0		SILTY CLAY: GRAY, MOIST, STIFF TO VERY STIFF, SOME SATURATED, INTERBEDDED SILTY CLAY, SOME FINE SAND, WOOD FRAGMENTS.
2.0	48.0–58.0	AS ABOVE
2.0		
1.6	58.0–73.0	SILTY CLAY/CLAYEY SILT: GRAY, MOIST, STIFF, WOOD FRAGMENTS, SOME FINE SAND.
1.6		

ERM-SOUTHWEST, INC. FIELD BORING LOG

WORK ORDER NO.: 14-97 DATE: 6-23-92 BORING NO.: SW-1

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
70							
75					2.0	73.0–79.0	SANDY SILT/SILTY SAND: GRAY, SATURATED, STIFF, INCREASING CLAY TO BASE.
80					1.9	79.0–80.0	CLAYEY SILT: GRAY, MOIST, STIFF, SOME FINE SAND.
							BORING TERMINATED AT 80.0 FEET.
85							
90							
95							
100							
105							
110							

ERM-SOUTHWEST, INC.

FIELD BORING LOG

WORK ORDER NO.: 14-97 BORING NO.: SW-2

PROJECT: SOLID WASTE MONITORING SYSTEM OWNER: EXXON, CO., USA LOCATION: WWTP

DATE STARTED: 6-15-92 DATE COMPLETED: 6-16-92

SURFACE CASING: TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

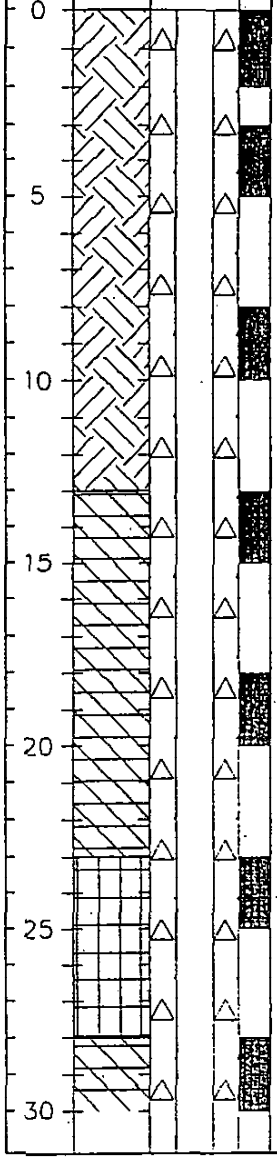
SCREEN: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE .01 IN.

CASING: TYPE 304 S.S. DIAMETER 2 IN. LENGTH 50 FT. SUMP LENGTH 2.5 FT.

BORING DIAMETER: 8.25 IN. BORING TD: 60 FT. STICKUP: 3 FT.

DRILLING COMPANY: FUGRO GEOSCIENCE DRILLER: J. KEY

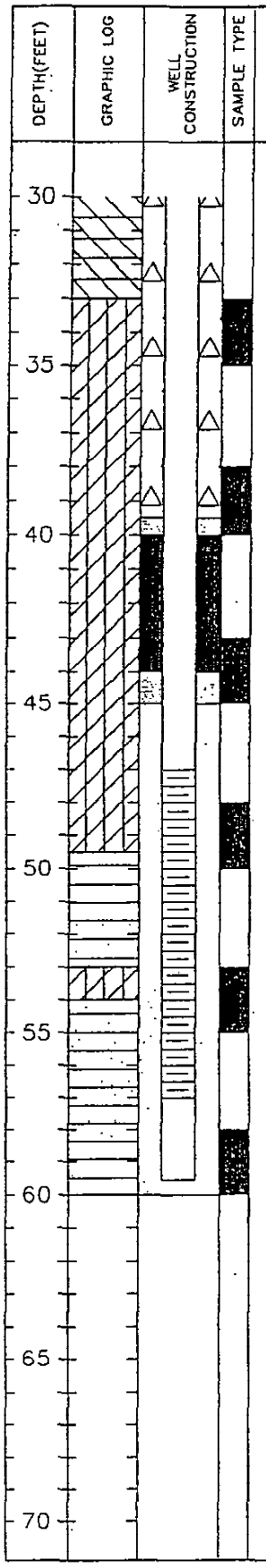
DRILLING METHOD: HOLLOW STEM AUGER LOG BY: G. GABALDON



DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0							
					1.0	0.0–13.0	FILL: SILTY CLAY, BROWN, MOIST, STIFF TO VERY STIFF, SHELL FRAGMENTS, IRON STAINING, SOME BLACK STAINING, ODOR, RUBBLE, SOME FINE SAND.
5					1.0		
					0.7		
10							
					1.8	13.0–23.0	SILTY CLAY: GRAY, MOIST, STIFF, SOME FINE SAND, SLIGHT ODOR.
15							
					2.2		AS ABOVE, SOME IRON STAINING, WOOD FRAGMENTS, NO ODOR.
20							
					0.2	23.0–28.0	SILTY SAND/SANDY SILT: GRAY, VERY MOIST, LOOSE TO MEDIUM DENSE, VERY FINE TO FINE, SAND MODERATELY WELL SORTED.
25							
					2.0	28.0–33.0	SILTY CLAY: GRAY, MOIST, STIFF TO VERY STIFF, INCREASING CLAY WITH DEPTH, SOME BLACK STAINING.
30							

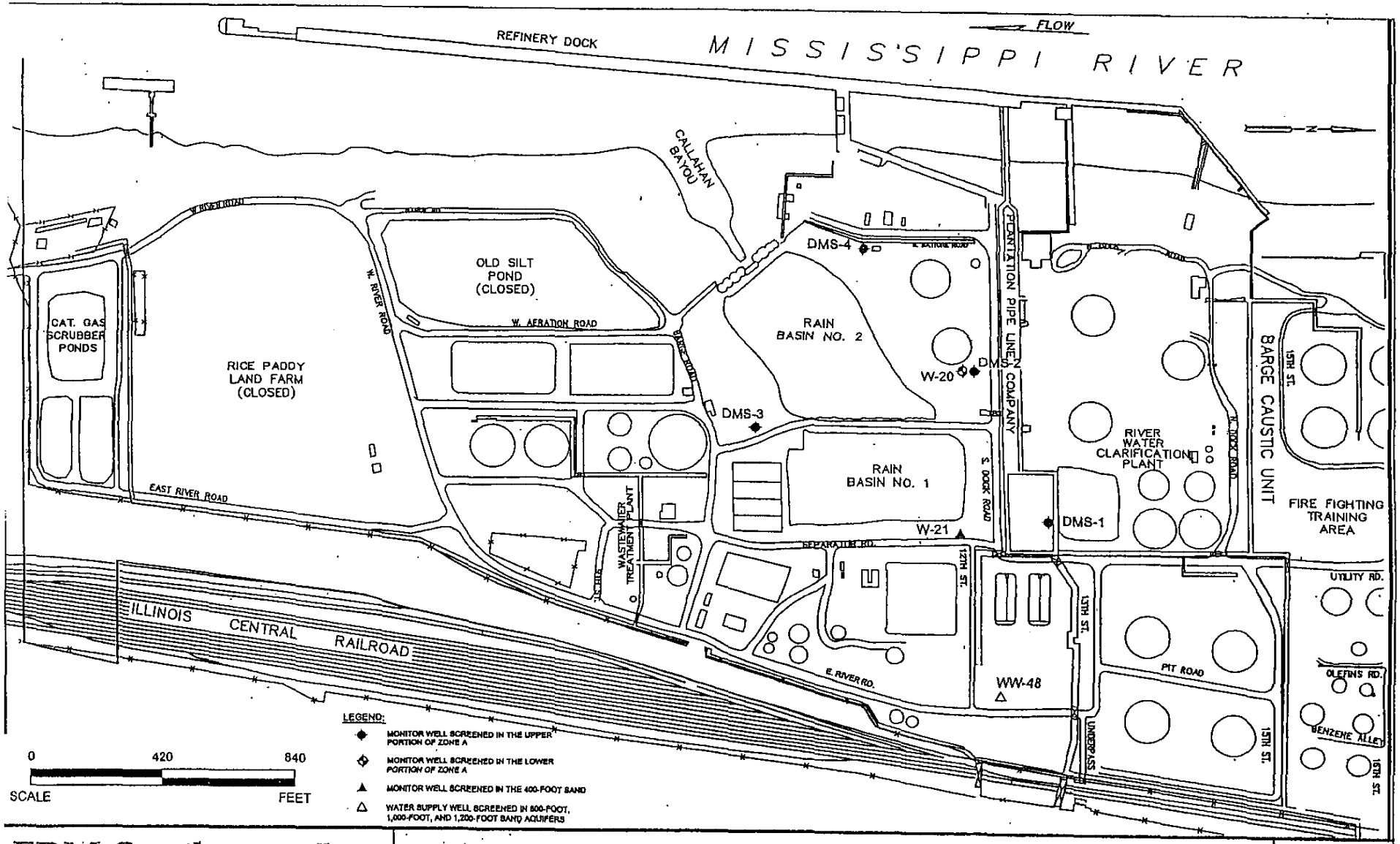
ERM-SOUTHWEST, INC. FIELD BORING LOG PAGE 2 OF 2

WORK ORDER NO.: 14-97 DATE: 6-15-92 BORING NO.: SW-2



DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
					1.9		CLAYEY SILT: GRAY, MOIST, STIFF, SOME FINE SAND.
					2.0		AS ABOVE, ROOTLETS.
						33.0–49.5	
					2.1		
					2.1		
						49.5–53.0	SILTY SAND: GRAY, SATURATED, MEDIUM DENSE, VERY FINE TO FINE.
						53.0–54.0	CLAYEY SILT: GRAY, MOIST, FIRM, SOME ROOTS.
					2.0	54.0–60.0	SILTY SAND: GRAY, SATURATED, MEDIUM DENSE, SOME ROOTS, VERY FINE TO FINE.
					1.6		
							BORING TERMINATED AT 60.0 FEET.

16



ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · MOBILE · BEAUMONT · BATON ROUGE · CORPUS CHRISTI

DESIGN: FDG	DRAWN: MMH	CHKD.: FDG
DATE: 02/06/03	SCALE: AS SHOWN	REV.:
W.O.NO.: 014723A216 B03		

FIGURE 1-2
WELL LOCATION MAP

ExxonMobil Refining & Supply Company
Baton Rouge, Louisiana

ERM.

ERM-Southwest, Inc.

FIELD BORING LOG

WORK ORDER NO.: 14-154 BORING NO.: W-20

PROJECT: RB-1 GW MON. OWNER: EXXON COMPANY, U.S.A. LOCATION: NORTH OF RB-2

DATE STARTED: 6-13-94 DATE COMPLETED: 7-8-94

SURFACE CASING: TYPE CARBON STEEL DIAMETER 10 IN. LENGTH 28 FT. DEPTH 28 FT.

TYPE _____ DIAMETER _____ LENGTH _____ DEPTH _____

SCREEN: TYPE STAINLESS STEEL DIAMETER 2 IN. LENGTH 10 FT. SLOT SIZE 0.01 IN.

CASING: TYPE STAINLESS STEEL DIAMETER 2 IN. LENGTH 93 FT. SUMP LENGTH 2 FT.

BORING DIAMETER: 14/8.25 IN. BORING TD: 30/125 FT. STICKUP: 3 FT.

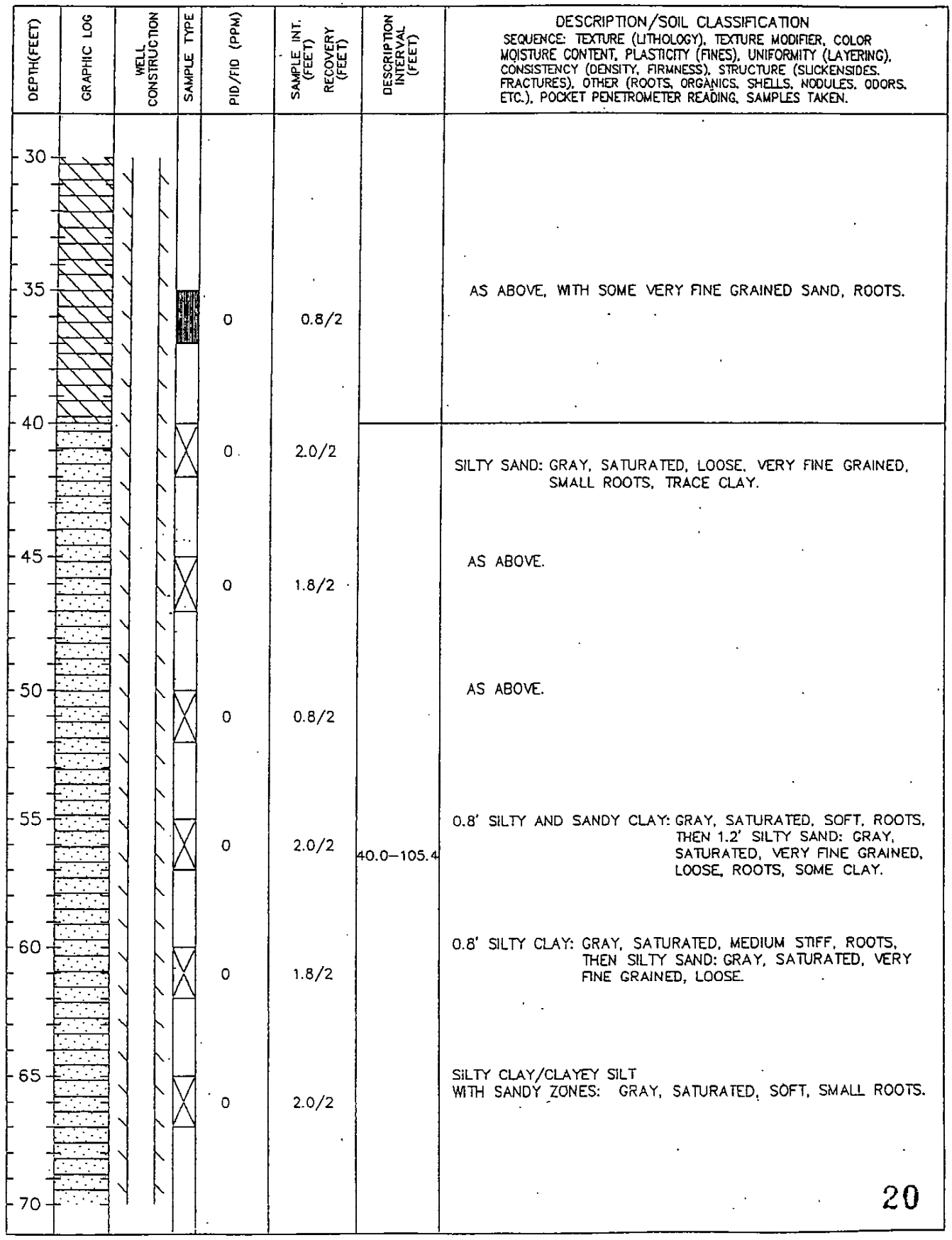
DRILLING COMPANY: FUGRO GEOSCIENCES DRILLER: J. GUNTER / D. FENDLEY

DRILLING METHOD: HOLLOW STEM AUGER/MUD ROTARY LOG BY: D. UPTHEGROVE

DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INT. (FEET) RECOVERY (FEET/FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
0							
				12.0	1.5/2	0.0–17.7	FILL: SILTY AND SANDY CLAY, GREEN-GRAY, BROWN AND BLACK, MOIST, FRIABLE, GRAVEL, HYDROCARBON (HC) ODOR.
5							
				15.2	0.8/2		AS ABOVE STIFF, W/ BLACK STAINING AND OILY POCKETS.
10							
15				73.5	0.8/2		AS ABOVE, SATURATED, RUNNY FROM 16.0–17.7 FEET, THEN
				11.1	1.7/2	17.7–40.0	CLAY (NATIVE): GREEN-GRAY, SATURATED, MEDIUM STIFF, LARGE WOOD FRAGMENTS, HC ODOR DECREASING WITH DEPTH.
20				.1.1	1.8/2		AS ABOVE, LESS ODOR.
25				0	1.4/2		SILTY CLAY: GREEN-GRAY, SATURATED, STIFF, NO ODOR. INCREASING SILT W/ DEPTH.
30							

ERM-Southwest, Inc. FIELD BORING LOG PAGE 2 OF 4

WORK ORDER NO.: 14-154 DATE: 6/13-7/8/94 BORING NO.: W-20

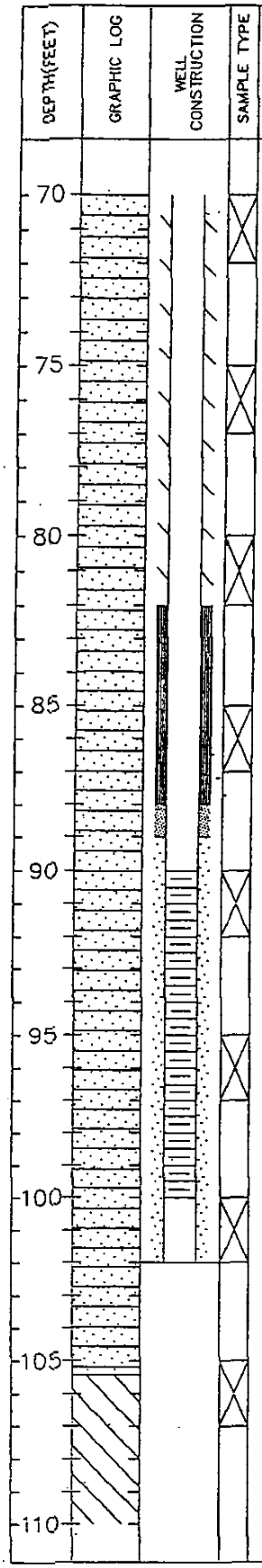


DEPTH (FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INT. (FEET) RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
30							
35				0	0.8/2		AS ABOVE, WITH SOME VERY FINE GRAINED SAND, ROOTS.
40				0	2.0/2	40.0–105.4	SILTY SAND: GRAY, SATURATED, LOOSE, VERY FINE GRAINED, SMALL ROOTS, TRACE CLAY.
45				0	1.8/2		AS ABOVE.
50				0	0.8/2		AS ABOVE.
55				0	2.0/2		0.8' SILTY AND SANDY CLAY: GRAY, SATURATED, SOFT, ROOTS, THEN 1.2' SILTY SAND: GRAY, SATURATED, VERY FINE GRAINED, LOOSE, ROOTS, SOME CLAY.
60				0	1.8/2		0.8' SILTY CLAY: GRAY, SATURATED, MEDIUM STIFF, ROOTS, THEN SILTY SAND: GRAY, SATURATED, VERY FINE GRAINED, LOOSE.
65				0	2.0/2		SILTY CLAY/CLAYEY SILT WITH SANDY ZONES: GRAY, SATURATED, SOFT, SMALL ROOTS.
70							

20

ERM-Southwest, Inc. FIELD BORING LOG PAGE 3 OF 4

WORK ORDER NO.: 14-154 DATE: 6/13-7/8/94 BORING NO.: W-20



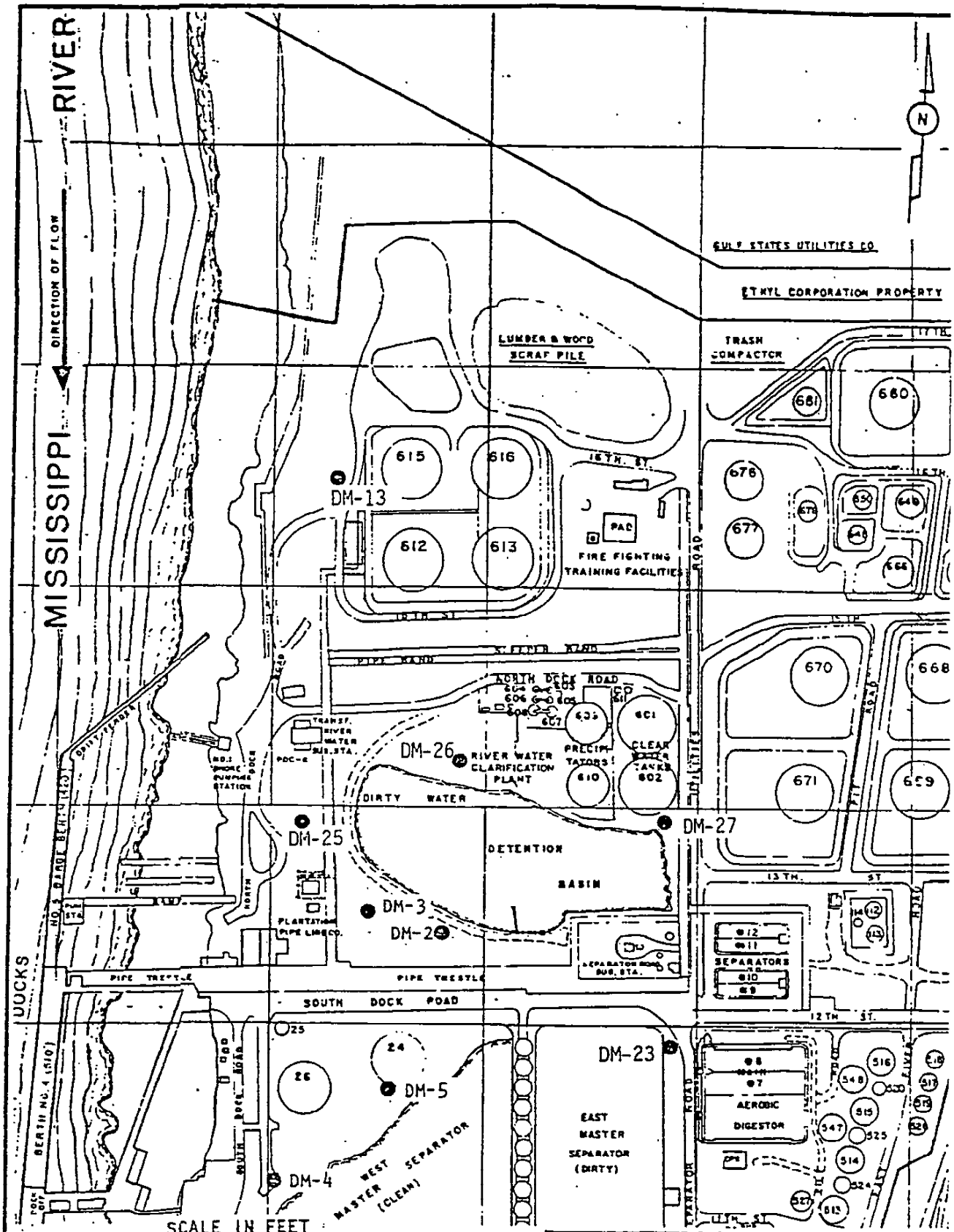
DEPTH (FEET)	PID/FID (PPM)	SAMPLE INT. (FEET) RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION
				SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
70	0	1.8/2		SILTY SAND: GRAY, SATURATED, VERY FINE GRAINED, LOOSE, ROOTS AND WOOD FRAGMENTS. SOME CLAY.
75	0	1.6/2		0.6' SILTY AND SANDY CLAY: GRAY, SATURATED, MEDIUM STIFF. THEN WOOD: PURPLE AND TAN, SATURATED.
80	0	1.6/2		SILTY SAND: GRAY, SATURATED, VERY FINE GRAINED, LOOSE, WITH SOME CLAY.
85	0	1.5/2		SILTY AND SANDY CLAY: GRAY, SATURATED, MEDIUM STIFF.
90	0	0.6/2		SILTY SAND: GRAY, SATURATED, VERY FINE GRAINED, MEDIUM DENSE.
95	0	1.8/2		0.8' AS ABOVE WITH WOOD FRAGMENTS, THEN SILTY CLAY: GRAY, SATURATED, STIFF, TRACE SAND.
100	0	2.0/2		AS ABOVE WITH WOOD FRAGMENTS.
105	0	1.8/2	105.4-127.0	0.4' AS ABOVE, THEN 1.4' CLAY: LIGHT GRAY AND TAN MOTTLED, MOIST, VERY STIFF-PLEISTOCENE.
110				

ERM-Southwest, Inc. FIELD BORING LOG PAGE 4 OF 4

WORK ORDER NO.: 14-154 DATE: 6/13-7/8/94 BORING NO.: W-20

DEPTH(FEET)	GRAPHIC LOG	WELL CONSTRUCTION	SAMPLE TYPE	PID/FID (PPM)	SAMPLE INT. (FEET) RECOVERY (FEET)	DESCRIPTION INTERVAL (FEET)	DESCRIPTION/SOIL CLASSIFICATION SEQUENCE: TEXTURE (LITHOLOGY), TEXTURE MODIFIER, COLOR MOISTURE CONTENT, PLASTICITY (FINES), UNIFORMITY (LAYERING), CONSISTENCY (DENSITY, FIRMNESS), STRUCTURE (SLICKENSIDES, FRACTURES), OTHER (ROOTS, ORGANICS, SHELLS, NODULES, ODORS, ETC.), POCKET PENETROMETER READING, SAMPLES TAKEN.
110				0	2.0/2		AS ABOVE, MOSTLY GRAY, SLIGHTLY SILTY.
115				0	2.0/2		1.8' GRAY SILTY SAND (SLOP FROM ABOVE), THEN 0.2' SILTY CLAY: TAN, MOIST, HARD.
120							
125				0	2.0/2		SILTY CLAY: GRAY GREEN, MOIST, HARD, SOME ORANGE Fe STAINING.
130							TD AT 127 FEET.
135							
140							
145							
150							

LOG OF BORING:	PLATE:
DM-1	E-2, E-3
DM-2	E-4
DM-3	E-5
DM-4	E-6
DM-5	E-7
DM-6	E-8, E-9
DM-7	E-10
DM-7A	E-11
DM-7B	E-11
DM-8	E-12
DM-8A	E-12
DM-9	E-13, E-14
DM-10	E-15, E-16
DM-10A	E-16
DM-11	E-17, E-18, E-19
DM-12	E-20, E-21
DM-13	E-22, E-23
DM-14	E-24, E-25
DM-15	E-26, E-27
DM-16	E-28
DM-17	E-29
DM-18	E-30
DM-19	E-31
DM-20	E-32, E-33
DM-21	E-34
DM-22	E-35
DM-23	E-36
DM-24	E-37
DM-25	E-38
DM-26	E-39
DM-26A	E-40
DM-27	E-41
B-1	E-42
B-2	E-43



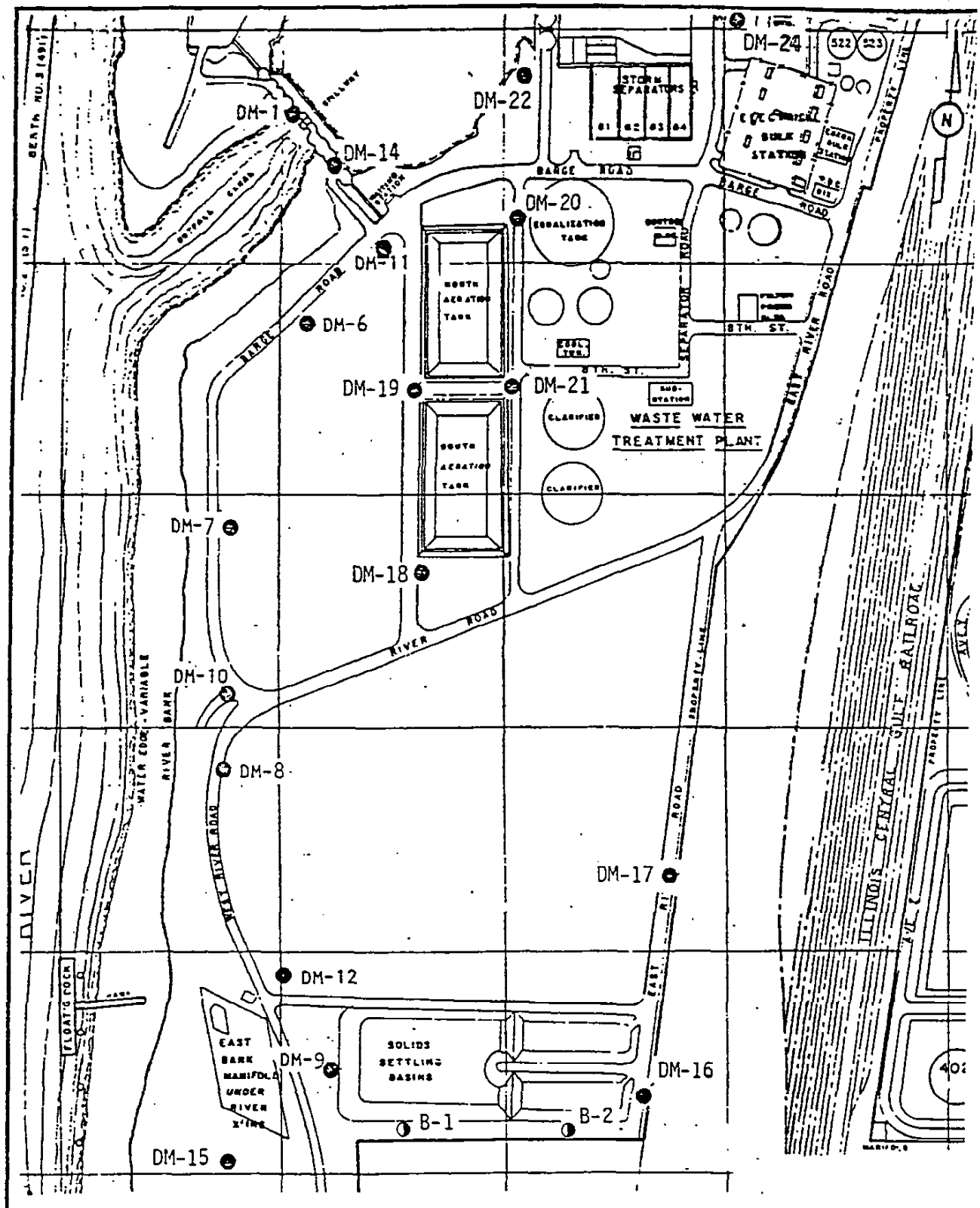
BATON ROUGE REFINERY
LOUISIANA
FOR EXXON USA

MONITOR WELL LOCATIONS
REFINERY

25

DAMES & MOORE

PLATE D-1



SCALE IN FEET
0 200 400

LEGEND

● MONITOR WELLS

◑ BORINGS ADVANCED FOR SUBSURFACE DATA ONLY

BATON ROUGE REFINERY
LOUISIANA
FOR EXXON USA

MONITOR WELL LOCATIONS
REFINERY

26

PLATE D-1 (CONT

BORING DM-1

SURFACE ELEVATION 36.96'
COORDINATES N 9349
E 8552

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE	DEPTH IN FEET	SAMPLING	SYMBOLS	DESCRIPTION
												0			REINFORCED CONCRETE
															BACKFILL TO COFFER DAM CELL
												5			
												10			
												15		CL	
												20			FILL
												25			
												30			SANDY SILT, TRACES OF GRAVEL
															OIL PRESENT, STRONG HYDROCARBON ODOR
												35		ML	
												40			GRAY, SILTY CLAY, SOFT, OIL PRESENT
												45			
															OIL IN DRILLING MUD DECREASES
												50		CL	
												55			
												60			
												65			ESTIMATED BOTTOM OF COFFER DAM PILING
										P	U	70		ML CL	GRAY SILT WITH ZONES OF SILTY CLAY

(CONTINUED ON FOLLOWING PLATE)

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-1 (cont'd)

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING #200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE	DEPTH IN FEET	SAMPLING
										P	U	70	
												75	
1.7×10^{-6}				50	94	27				P	U	80	
8.6×10^{-5} (FIELD)													
												85	
												90	
												95	
												100	
												105	
												110	
												115	
												120	
												125	
												130	
												135	
												140	

SYMBOLS

DESCRIPTION

BORING TERMINATED AT A DEPTH OF 84.0 FEET ON 9/19/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:

THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

PLATE E-7

BORING DM-2

SURFACE ELEVATION 38.38'
COORDINATES N 10,238
E 8,922

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE
										P	U
										P	U
										P	U
							74	32	42	P	U
										P	U
5.4×10^{-8}					81	37				P	U
										P	U
										P	U
										P	U
										P	U
3.9×10^{-6}				77	89	31				P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS

DESCRIPTION

- PL — BROWN AND LIGHT GRAY CLAYEY SILT WITH POCKETS OF CLAYEY SAND AND GRAVEL, OILY
- CL — GREENISH GRAY AND DARK GRAY SILTY CLAY, SOFT, ODOR OF OIL, WOOD FRAGMENTS
- CL — GRADES BLACK WITH OIL
- CH — GRAY, CLAY, SOFT
- CH — WOOD FRAGMENTS
- CL — GRAY SILTY CLAY, SOFT
- CL — GRAY, CLAYEY SILT
- PL — BORING TERMINATED AT A DEPTH OF 47.0 FEET ON 9/25/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

BORING DM-3

SURFACE ELEVATION 37.92'
COORDINATES N 10,283
E 8751

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS			% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			SAMPLING	
	TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)				LL (%)	PL (%)	PI (%)	BLOW COUNT	SAMPLE TYPE
										P	U
										P	U
							57	26	31	P	U
										P	U
										P	U
										P	U
										P	U
							53	24	29	P	U
										P	U
										P	U
										P	U
										P	U
										P	U
										P	U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING SYMBOLS

DESCRIPTION	
GRAY AND BLACK, CLAYEY SILT, OIL PRESENT	ML
BROWN SILTY CLAY	CL
GRADES GREENISH GRAY	
GRAY SILT	ML
GRAY, CLAY, SOFT, OILY ODOR	CH
GRAY CLAY WITH TRACES OF SILT	
FINE SILT LENSES PRESENT	
CLAYEY SILT LENSE	CH
GRAY SANDY SILT	ML
CLAY ZONE	
GRAY SILTY CLAY, STIFF	CL

BORING TERMINATED AT A DEPTH OF 72.0 FEET ON 9/22/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANC WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-4

SURFACE ELEVATION 41.38'
COORDINATES N 9658
E 8546

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING SYMBOLS	DESCRIPTION
										P	U	0	CL	LIGHT BROWN CLAY WITH RUBBLE
														BLACK SANDY CLAY WITH OIL — FILL
										P	U	5		
														GRAY SILTY CLAY
							56	27	29	P	U	10	CH	
7.7×10^{-8}					85	34				P	U	15		
										P	U	20		
													CL	INTERBEDDED GRAY SILTY CLAY AND CLAYEY SILT, SOFT
							39	25	14	P	U	25		GRAY SILTY CLAY, SOFT
														OIL NOTED IN NATURAL DESSICATION CRACKS
										P	U	30		
													CL/ML	INTERBEDDED GRAY SILTY CLAY AND SILT, OILY WOOD FRAGMENTS
										P	U	35		
														GRAY SILTY CLAY, SOFT
							24	18	26	P	U	40	CL	
										P	U	45		
														GRAY CLAYEY SILT
										P	U	50		
														GRADES WITH THIN CLAY LENSES
4.9×10^{-6} (FIELD)										P	U	55	ML	
												60		BORING TERMINATED AT A DEPTH OF 60.0 FEET ON 9/13/79
												65		
												70		

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-5

SURFACE ELEVATION 41.31'
COORDINATES N 9869
E 8806

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE
										P	U
										P	U
										P	U
										P	U
4.1×10^{-8} 3.8×10^{-6} (FIELD)					75	45				P	U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS

DESCRIPTION

- 0: GRAY AND BROWN SANDY CLAY WITH SHELLS AND GRAVEL (CL)
- FINE TO MEDIUM SAND, LOOSE. PERCHED WATER TABLE AT 2 FEET 9/19/79 (SP)
- FILL
- 10: GRAY AND BLACK CLAY WITH TRACES OF OIL AND WOOD FRAGMENTS (CH)
- GRADES WITH TRACES OF SAND
- VISIBLE OIL GRADES OUT
- GRADES WITH SILT ZONES
- 25: BORING TERMINATED AT A DEPTH OF 26.5 FEET ON 9/19/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

32

DAMES & MOORE

BORING DM-6

SURFACE ELEVATION 52.29'
COORDINATES N 8905
E 8584

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE
										P	U
										P	U
										P	U
										P	U
										P	U
							71	22	49	P	U
										P	U
										P	U
							55	21	34	P	U
										P	U
										P	U
										P	U
							64	23	41	P	U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS

DESCRIPTION

GRAY SANDY CLAY WITH OILY SLUDGE, SOFT

GRADES BLACK WITH MORE SAND, AND DEBRIS

GRADES WITH LESS SAND

FILL

GRADES GRAY

GRAY, SLIGHTLY SILTY CLAY, MEDIUM STIFF

GRADES WITH MORE SILT

FREE OIL NOTED IN DESSICATION CRACKS

CH

NO FREE OIL PRESENT

GRADES WITH OCCASIONAL FINE SILT ZONES

(CONTINUED ON FOLLOWING PLATE)

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-6 (cont'd)

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE	DEPTH IN FEET	SAMPLING
										P	U	70	
										P	U	75	
										P	U	80	
										P	U	85	
1.8×10^{-5} (FIELD)										P	U	90	
												95	
												100	
												105	
												110	
												115	
												120	
												125	
												130	
												135	
												140	

SYMBOLS

DESCRIPTION

CH

GRADES WITH MORE SILT

INTERBEDDED GRAY SILT AND SILTY CLAY

ML/CL

BORING TERMINATED AT A DEPTH OF 95.0 FEET ON 9/10/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-7

SURFACE ELEVATION 52.77'
COORDINATES N 8466
E 8416

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE	DEPTH IN FEET	SAMPLING	SYMBOLS	DESCRIPTION
										P	U	0	■		DARK GRAY AND BLACK CLAY WITH RUBBLE AND OILY WASTE
										P	U	5	■		
										P	U	10	■	CL	FILL
										P	U	15	■		
										P	U	20	□		GRAY CLAY, SOFT WITH TRACES OF OIL
										P	U	20	⊠		
					82	36				P	U	25	■	CH	GRADES WITH SILT AND TRACE OF OIL, MEDIUM STIFF
							77	26	46	P	U	30	■		GRADES STIFF WITH LESS SILT
										P	U	35	□		GRADES WITH MORE SILT
									N.P.	P	U	37	■		
										P	U	37	■		INTERBEDDED GRAY SILT AND SILTY CLAY
										P	U	40	■	ML/CL	
8.4×10^{-6} (FIELD)										P	U	45	■		
												48			BORING TERMINATED AT A DEPTH OF 48.0 FEET ON 9/9/79
												50			
												55			
												60			
												65			
												70			

KEY

■ INDICATES UNDISTURBED SAMPLE
⊠ INDICATES DISTURBED SAMPLE
□ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
◪ INDICATES STANDARD PENETRATION TEST SAMPLE
P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

U - DAMES & MOORE "U" BIT
T - DAMES & MOORE THIN-WALL
P - DAMES & MOORE PISTON
S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-7A

COORDINATES ADJACENT DM-7

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS			% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			SAMPLING	
	TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)				LL (%)	PL (%)	PI (%)	BLOW COUNT	SAMPLE TYPE
										P	U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20

SAMPLING

SYMBOLS DESCRIPTION

0 – DARK GRAY CLAY, SANDY WITH GRAVEL, OILY (CL)

5 – GRAY CLAY, WITH OIL (CH) — FILL

RUBBLE

BORING TERMINATED AT A DEPTH OF 8.5 FEET ON 9/6/79
OBSTRUCTION IN HOLE

BORING DM-7B

COORDINATES ADJACENT DM-7

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS			% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			SAMPLING	
	TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)				LL (%)	PL (%)	PI (%)	BLOW COUNT	SAMPLE TYPE
										P	U
										P	U
										P	U
										P	U
										P	U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30

SAMPLING

SYMBOLS DESCRIPTION

0 – DARK GRAY, SILTY CLAY WITH RUBBLE, OILY (CL)

FILL

BORING TERMINATED AT A DEPTH OF 24.0 FEET ON 9/6/79
RUBBLE CAVING INTO HOLE

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P – IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U – DAMES & MOORE "U" BIT
- T – DAMES & MOORE THIN-WALL
- P – DAMES & MOORE PISTON
- S – STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORINGS

BORING DM-8

SURFACE ELEVATION 52.97'
COORDINATES N 7942
E 8393

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET
												0
										P	U	5
										P	U	10
										P	T	15
					79	43				P	U	20
							60	22	38	P	U	25
1.8×10^{-5}				85	92	30				P	U	30
										P	U	35
4.1×10^{-4}										P	U	40
										P	U	45
												50

SYMBOLS / DESCRIPTION

- 0–5: BLACK CLAY WITH SILT, RUBBLE, TRASH AND OILY WASTE (CL) — FILL
- 20: GRAY CLAY WITH TRACE OF SILT (CH)
- 25: GRADES GRAY-BROWN, LESS SILT
- 30: GRADES BROWN
- 30: LIGHT BROWN SILT WITH CLAY (ML)
- 35: CLAY GRADES OUT
- 35: GRADES GRAY
- 40: GRADES WITH FINE SAND
- 50: BORING TERMINATED AT A DEPTH OF 48.0 FEET ON 9/12/79

BORING DM-8A

SURFACE ELEVATION
COORDINATES

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET
										P	U	0
												5
												10

SYMBOLS / DESCRIPTION

- 0–5: GRAY SILTY CLAY WITH GRAVEL (CL) — FILL
- 5: BORING TERMINATED AT A DEPTH OF 5.0 FEET ON 9/12/79 BECAUSE OF BROKEN AUGER

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ▩ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORINGS

37

DAMES & MOORE

BORING DM-9

SURFACE ELEVATION 48.40'
COORDINATES N 7267
E 8639

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	STRENGTH TEST RESULTS: CONFINING PRESSURE (psf)	STRENGTH TEST RESULTS: PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	ATTERBERG LIMITS: PL (%)	ATTERBERG LIMITS: PI (%)	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE TYPE
										P	U
										P	U
										P	U
										P	U
					77	44				P	U
1.1×10^{-7}				99	85	34				P	U
							56	22	34	P	U
1.9×10^{-8}					74	45				P	T
							78	27	51	P	U
1.6×10^{-6}					92	29				P	U
							33	26	7	P	U
										P	U
										P P	U U
										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS

DESCRIPTION

- DARK GRAY SANDY CLAY WITH GRAVEL, OILY
- GRAVEL GRADES OUT
- OCCASIONAL SHELLS
- PERCHED WATER TABLE AT 13 FEET
- BLACK FINE TO MEDIUM SAND (SP)
- GRAY CLAY, MEDIUM STIFF. TRACES OF ROOTS (CH)
- GRAY SILTY CLAY (CH)
- GRADES WITH LESS SILT
- GRAY CLAYEY SILT, LOOSE (ML)

FILL

(CONTINUED ON FOLLOWING PLATE)

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE

P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANC WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

38

DAMES & MOORE

PLATE E-13

BORING DM-9 (cont'd)

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET
										P	U	70
										P	U	75
										P	U	80
										P	U	85
2.2×10^{-5} (FIELD)										P	U	90
										P	U	95
												100
												105
												110
												115
												120
												125
												130
												135
												140

DESCRIPTION

GRADES WITH MORE SILT

GRAY CLAYEY SILT

GRADES LESS CLAYEY

GRAY SILTY CLAY

GRAY SILT

BORING TERMINATED AT A DEPTH OF 96.0 FEET ON 9/13/79

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-10

SURFACE ELEVATION 51.26'
COORDINATES N 8103
E 8409

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING SYMBOLS	DESCRIPTION
										P	U	0	■	GRAY SILTY CLAY WITH RUBBLE AND TRACES OF OIL
										P	U	5	■	FILL
										P	U	10	□	
										P	U		⊠	
										P	U		□	GRAY CLAY, MEDIUM STIFF
							84	26	59	P	U	15	■	CH
										P	U		■	GRAY SILTY CLAY, STIFF
										P	U	20	■	CL
														GRAY AND DARK BROWN CLAY, MEDIUM STIFF
										P	U	25	■	CH
										P	U		■	BROWN AND GRAY MOTTLED SILTY CLAY
							42	21	21	P	U	30	■	CL
										P	U	35	□	
										P	U	40	□	GRAY SILT
										P	U	45	■	
										P	U		■	
										P	U	50	■	
										P	U	55	■	ML
										P	U		⊠	GRADES CLAYEY
												60		
										P	U	65	■	
												70		

(CONTINUED ON FOLLOWING PLATE)

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING

DAMES & MOORE

BORING DM-10 (cont'd)

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING
										P	U	70	
									N.P.	P	U	75	
										P	U	80	
										P	U	85	
										P	U	90	
										P	U	95	
										P	U	100	
										151	U	105	
4.3×10^{-3} (FIELD)										162	U	110	
												115	
												120	

SYMBOLS / DESCRIPTION

- GRAY SILTY CLAY AND INBEDDED CLAYEY SILT
- GRADES VERY SILTY
- GRAY CLAYEY SILT
- GRAY SILTY CLAY AND INTERBEDDED CLAYEY SILT
- GRAY FINE SILTY SAND WITH WOOD FRAGMENTS
- GRAY FINE TO COARSE SAND, GRAVELLY, DENSE
- GRADES WITH SILT AND GRAVEL TO 1 INCH
- BORING TERMINATED AT A DEPTH OF 115.0 FEET ON 9/6/79

BORING DM-10A

SURFACE ELEVATION

COORDINATES

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO. 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING
										P	U	0	
												5	
												10	

SYMBOLS / DESCRIPTION

- BROWN CLAY WITH SHELLS, GRAVEL AND RUBBLE — FILL
- BORING TERMINATED AT A DEPTH OF 4.0 FEET ON 9/5/79
- LOW PRESSURE STEAM LINE PENETRATED

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE

P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

U - DAMES & MOORE "U" BIT

T - DAMES & MOORE THIN-WALL

P - DAMES & MOORE PISTON

S - STANDARD SPLIT-SPOON

NOTE:

THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORINGS

BORING DM-11

SURFACE ELEVATION 53.72'
COORDINATES N 9071
E 8754

PERMEABILITY (cm/s)	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING	SYMBOLS	DESCRIPTION
										P	U	0			BLACK CLAYEY SAND WITH OILY SLUDGE AND TRACES OF GRAVEL
										P	U	5			DARK GRAY, MEDIUM SAND
										P	U	10			BLACK OILY SLUDGE WITH RUBBLE
										P	U	15			FILL
										P	U	20			
										P	U	25			GRAY CLAY, MEDIUM STIFF
										P	U				FREE OIL IN NATURAL DESSICATION CRACKS
							85	28	57	P	U	30		CH	GRADES SILTY WITH ROOT FRAGMENTS, FREE OIL IN NATURAL DESSICATION CRACKS
										P	U	35			
															INTERBEDDED GRAY SILTY CLAY AND CLAYEY SILT
7.4×10^{-6}				76	90	32				P	U	40			
									N.P	P	U	45			
2.0×10^{-8} 3.5×10^{-7}				98	80 86	41 34				P	U	50			
							27	24	4	P	U	55		CL ML	
										P	U	60			
										P	U	65			
												70			

(CONTINUED ON FOLLOWING PLATE)

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:
THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

LOG OF BORING